THE

JOURNAL

OF THE

ROYAL GEOGRAPHICAL SOCIETY.

VOLUME THE FORTY-SEVENTH.

1877.

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Royal Geographical Society,

1877.

REPORT OF THE COUNCIL,

READ AT THE ANNIVERSARY MEETING ON THE 28TH MAY.

THE Council have the pleasure of submitting to the Fellows the customary Annual Report on the financial and general condition of the Society.

Members.—The number of new Fellows added to the roll of the Society during the year ending April 30th is 292, besides one Honorary and two Honorary Corresponding Members. In the previous year (1875–6), the number of new Fellows was 266; in 1874–5, 294; and in 1873–4, 342. On the other hand, there have been removed by death 66, by resignation 43, and by default of subscription 45: making the net increase 138. In the year 1875–6 the net increase was 149; in 1874–5, 202; and in 1873–4, 177. The Society has lost also by death 4 Honorary Corresponding Members. The total number of Fellows (exclusive of Honorary) on the list, April 30th, was 3295, of whom 760 were Life Members.

Finances.—The total net income of the Society for the financial year ending 31st of December, 1876 (exclusive of balance in hand and special Parliamentary grant), was 8611*l.* 11*s.* 8*d.*, of which 7109*l.* 11*s.* consisted of the subscriptions of Fellows. These amounts compare favourably with the same items of previous years: thus in 1875 the income was 7934*l.* 15*s.* 10*d.*, and subscriptions 6441*l.* 11*s.* In 1874, 7511*l.* 11*s.* 10*d.* and 6425*l.* 1*s.* 6*d.*; and in 1873, 6752*l.* 4*s.* 4*d.* and 5643*l.* 19*s.* 6*d.*

The net expenditure, as will be seen by the annexed Balance-sheet, was 6870*l.* 13*s.* 1*d.* In the previous year it was 5683*l.* 4*s.* 10*d.* Part of this increase is due to the greater amount spent on Expeditions, viz. 1054*l.* 9*s.* as compared with 621*l.* 3*s.* 4*d.*, and the rest chiefly to the greater cost of the publications and maps. No money was invested within the year.

The Finance Committee of the Council have, as in former years, held their Monthly Meetings, supervising the accounts of the Society. The Annual Audit was held in April, the Auditors, whose signatures are appended to the annexed Balance-sheet, being the Right Hon. Lord Cottesloe and Sir Rawson W. Rawson, on behalf of the Council, and General Sir George Balfour, M.P., and H. Jones Williams, Esq., on behalf of the Fellows. The thanks of the Council and of the Society at large are due to these gentlemen, for having freely devoted so much of their valuable time to this arduous task.

STATEMENT showing the RECEIPTS and EXPENDITURE of the Society from the Year 1848 to the 31st Dec. 1876.

In 1856 a Treasury Grant of 1000*l* for the East African Expedition received.

In 1860 a Treasury Grant of 2500*l*. for the East African Expedition received.

In 1869 Legacy of Mr. Benjamin Oliveira, 1506*l*. 17*s*. 1*d*.

In 1870 Legacy of Mr. Alfred Davis, 1800*l*.

In 1871 Legacy of Sir Roderick Murchison, 1000*l*.

In 1872 Amount of Mr. James Young's Grant for the Livingstone Congo Expedition, 2000*l*.

In 1874 Amount of Mr. James Young's Grant for the Livingstone Congo Expedition, 1041*l*. 14*s*.

In 1876 Special Parliamentary Grant of 3000*l*. towards the Expenses of the Cameron Expedition.

Year.	Cash Receipts within the Year.			Cash Amounts invested in Funds.			Deducting Amounts invested in Funds; actual Expenditure.		
	£	s.	d.	£	s.	d.	£	s.	d.
1848	696	10	5	..	..		755	6	1
1849	778	3	0	..	..		1098	7	6
1850	1,036	10	5	..	..		877	2	10
1851	1,056	11	8	..	..		906	14	7
1852	1,220	3	4	..	..		995	13	1
1853	1,917	2	6	..	..		1675	6	0
1854	2,565	7	8	..	..		2197	19	3
1855	2,584	7	0	..	..		2636	3	1
1856	3,372	5	1	533	10	0	2814	8	1
1857	3,142	13	4	378	0	0	3480	19	9
1858	3,089	15	1	..	..		2944	13	6
1859	3,471	11	8	950	0	0	3423	3	9
1860	6,449	12	1	466	17	6	5406	3	7
1861	4,792	12	9	1358	2	6	3074	7	4
1862	4,659	7	9	1389	7	6	3095	19	4
1863	5,256	9	3	1837	10	0	3655	4	0
1864	4,977	8	6	1796	5	0	3647	7	10
1865	4,905	8	3	1041	5	0	4307	4	5
1866	5,085	8	3	1028	15	0	4052	15	0
1867	5,462	7	11	1029	0	6	3943	17	4
1868	5,991	4	0	1857	3	9	4156	17	10
1869	6,859	16	0	2131	5	0	4646	0	8
1870	8,042	6	1	3802	6	0	3845	10	6
1871	6,637	3	7	1000	0	0	3726	4	4
1872	8,119	7	9	1999	4	6	5871	13	2
1873	7,761	18	10	2015	1	8	6697	12	6
1874	8,753	5	10	499	0	0	7876	2	3
1875	7,934	15	10	2002	7	6	5683	4	10
1876	11,611	11	8	..	..		6870	13	1

STATEMENT of ASSETS—31st December, 1876.

				£	s.	d.
Freehold House, Fittings, and Furniture, estimated (exclusive of Map Collections and Library) ..				20,000	0	0
Investments, viz.:—						
India 5 per Cent. Stock	£1000	0	0			
Great Western Railway 4½ per Cent. Debenture Stock (Davis Bequest)	1800	0	0			
London and North-Western Railway 4 per Cent. Debenture Stock (Murchison Bequest) ..	1000	0	0			
North-Eastern Railway 4 per Cent. Debenture Stock	1000	0	0			
Great Indian Peninsula Railway Guaranteed 5 per Cent. Capital Stock	4000	0	0			
March Exchequer Bills	1000	0	0			
				9,800	0	
Balance at Bank and in hand				*5,786	2	
Total				35,586	2	1

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* This sum includes the Special Parliamentary Grant of 3000*l*. towards the expenses of the Cameron Expedition, transferred after Dec. 31st, 1876.

Publications.—The 46th volume of the 'Journal' will be published during the present week, the issue having been delayed this year owing to the necessity of including Colonel C. G. Gordon's important Map of the connection of the Nile with the Equatorial Lakes, and its accompanying Paper, which were presented by its author after the rest of the 'Journal' was ready for publication. Volume 20 of the 'Proceedings' has been completed, and three parts of Volume 21 issued to the Fellows, since the last Anniversary.

Livingstone Aid Expeditions.—The large amount expected to be charged in the present Balance-sheet, on account of Lieutenant Cameron's Expedition, for which the Fellows were prepared in last year's Report, was happily reduced to moderate proportions in consequence of the liberality of Her Majesty's Government, who sanctioned a grant of 3000*l.* towards the expenses of this truly national undertaking. The sum paid out of the Society's funds on this account, as will be seen by the Balance-sheet, was only 1054*l.* 9*s.* There are still some outstanding bills which will appear, it is expected, in the next Balance-sheet: and on the credit side, also, there will appear the amount (450*l.*) produced by the sale, a few weeks ago, of the schooner which brought Lieutenant Cameron's followers from Loanda to Zanzibar.

Library.—739 books and pamphlets have been added to the Library during the past year, 535 (including all the pamphlets) being donations, and 204 purchased. Besides these, and without reckoning newspapers, 1214 separate parts or numbers of periodicals, Transactions, Reports, &c., have been received. 26 whole volumes and 55 separate parts have been obtained by gift in, or towards, completion of defective series.

In addition to the numerous pamphlets and small works put into covers on the Society's premises, 313 volumes have been bound and 44 repaired during the past year.

The sum of 108*l.* 12*s.* 2*d.* has been expended by the Library Committee in purchasing books, and the further sum of 114*l.* 6*s.* 6*d.* in binding.

Among the more important accessions are:—Michaud's

Biographie Universelle (45 vols.); the whole of the publications resulting from the voyage of the Austrian frigate *Novara* round the earth (presented by the Austrian Government on the application of Dr. Karl von Scherzer); the completion of the like works of the Swedish frigate *Eugenie* (presented by the R. Swedish Academy of Sciences); Giglioli's Viaggio intorno al Globo della Magenta (presented by the Author); a collection of 17 African grammars, dictionaries, and vocabularies, by Crowther, Koelle, Krapf, Schön, Reichardt, and others (presented by the Church Missionary Society, through E. Hutchinson, Esq.); Mr. W. H. Hooper's private journals of the voyages of the *Hecla* and *Griper*, &c., in search of a North-West Passage, 6 vols. (presented by W. E. P. Hooper, Esq.); the 5 vols. now published of the 9th edition of the Encyclopædia Britannica (presented by Messrs. Black and Co.); Pissis's Geografia fisica de Chile (presented by the Chilian Minister, per T. K. Weir, Esq.); Sir T. D. Forsyth's Report of the Mission to Yarkund, in 1873, Hunter's statistical account of Bengal in 5 vols., Eastern Persia, edited by Sir F. Goldsmid, and Burgess's Antiquities of Kathiawar and Kachh (presented by H.M. Secretary of State for India, with many other valuable books and papers); the Duc de Luynes' Voyage d'Exploration à la mer Morte; Bancroft's Native races of the Pacific; the wanting volumes of the Collection des Guides-Joanne; the Zoology of the Voyage of the *Herald*; Wallace's Geographical distribution of animals (presented by the Author); Rodriguez's El Marañon, 1684 (presented by Col. G. E. Church); the true travels of Captaine John Smith, 1630 (presented by W. Chandless, Esq.); the Atlases to Caillaud's Voyage à Méroé; the Lucknow Album (presented by E. Bickers, Esq.); the completing parts of vol. i. and all vol. ii. of Reclus' Géographie Universelle (presented by the Author); and two Albums of photographs of Adelaide (presented by the S. Australian Government, per J. Boothby, Esq.).

The whole of the Library has now been re-arranged and press-marked; and the room afforded by the recently-added presses will permit of additions, at the present average rate, for two or three years.

A second supplemental Catalogue, to include acquisitions from January, 1871, to December, 1876, inclusively, is now in course of preparation, having been authorized by the Council on the recommendation of the Library Committee.

The Library continues to be much consulted by Fellows of the Society, private students, authors, and officers of the public departments.

Map-Room.—The accessions to the Map-Room Collection since the last Anniversary comprise 391 Maps on 1420 Sheets; 5 Atlases, containing 73 Maps; of these 10 Maps and 2 Atlases are by purchase. 10 Diagrams have been constructed on the establishment, and 3 others have been added by purchase.

Among the most important acquisitions are:—602 Sheets of the Ordnance Survey Maps of Great Britain, on various scales; presented by the First Commissioner of Works, through Major-General Cameron, Director. 73 British Admiralty Charts; presented by the Lords Commissioners of the Admiralty, through Captain F. J. Evans, C.B., Hydrographer. 54 French Admiralty Charts; presented by the Dépôt des Cartes et Plans de la Marine. 328 Sheets of various India Topographical Surveys; presented by H.M. Secretary of State for India, through the India Office. 88 Sheets of the Spezial-Karte der Oesterreichisch-Ungarischen Monarchie, scale $\frac{1}{75000}$; by purchase. 18 Sheets of Tracings, presented by Colonel C. G. Gordon, of the Nile between Berber, Khartum, and the Victoria Nyanza. Maps issued by General Stone, Chief of the General Staff, Cairo; prepared by the Officers of the Khedive's Expedition to the Upper Nile, Darfur and Abyssinia. 31 Sheets of Norwegian Maps and Charts; presented by l'Institut Géographique de la Norvége. 7 Sheets of the Topographical Survey of Sweden; presented by Colonel V. von Vegesack, Director. Maps of E. Giles's Exploration in Australia; prepared in the Surveyor-General's Office, Adelaide, and presented by H.M. Secretary of State for the Colonies. Maps showing Professor Nordenskiold's Tracks on the Kara Sea and to the mouth of the River Obi, in 1875–6. Map of Bosnia, Herzegovina, Servia, and Montenegro, on 12 Sheets. Sheets of the Swedish Geological Survey; presented by Otto Torell, Director. Maps of the State Geological Survey of California; presented by J. D. Whitney. Map to illustrate the History of the Geography of Peru, prior to 1553, by Don Antonio Raimondi. 36 Sheets of the Topographical Atlas of Switzerland;

presented by Colonel Siegfried, Chief of Federal Survey, Berne. Stanford's Library Map of London, on 24 Sheets; purchased. Geological Map of Newfoundland, by Alexander Murray. Map showing the direction and probable intensity of the Winds in the North Atlantic Ocean, by Lieutenant L. Brault, French Navy; presented by J. F. Imray, Esq. Geological Map of Scotland, by A. Geikie, LL.D; presented by Messrs. W. and A. K. Johnston, Publishers. Mont Blanc, by E. Viollet le Duc; purchased. Map of Persia, compiled by Captain St. John, R.E., on 6 Sheets. Map of Turkistan and the adjoining Countries, by Colonel J. S. Walker, R.E., 4 Sheets. 3 Parts of Spruner's Atlas of Medieval Geography; presented by Justus Perthes, Gotha. Maps and Photographs by U.S. Geological and Geographical Survey of the Territories; presented by Dr. F. V. Hayden, Director. Map of European Russia, on 12 Sheets; purchased. Native Map of Chinese Turkistan; presented by H. Kopsch, Esq. Sheets of the Topographical Atlas of Denmark; presented by the Royal Danish Ministry of War, through Count von Bulow. Maps by Dr. Petermann from the Geographische Mittheilungen. Physical and Statistical Atlas of the German Empire, Part I.; purchased.

Grants to Travellers.—Instruments have been lent in the past two years to the following travellers:—Mr. E. D. YOUNG, R.N., proceeding to Lake Nyassa to form a Missionary Settlement at Livingstonia, a complete Set of Instruments; amounting to 95*l.* 17*s.* 6*d.* These have now been transferred to the care of Dr. James Stewart, in charge of that Station.—W. L. WATTS, Esq., F.R.G.S., Visit to Iceland, two aneroids and one compass (prismatic); value 14*l.*—Capt. ALLEN YOUNG, R.N.R., Arctic Regions, Smith Sound: one pocket chronometer; boiling-water apparatus; three B. P. thermometers; one artificial horizon and a mercurial barometer, both on Capt. C. George's pattern; value, 42*l.*—Mr. H. B. COTTERILL, Visit to Lake Nyassa: one prismatic compass; boiling-water apparatus; and two B. P. thermometers; a watch by Brock; value, 24*l.*—Capt. ALLEN YOUNG, R.N.R., Voyage up Smith Sound to the Arctic Exploring Expedition: a mercurial barometer, Capt. C. George's pattern; boiling-water apparatus, and two B. P. thermometers;

a pocket chronometer; bottle of mercury; value, 29*l.*—Rev. Q. W. Thomson, East Coast of Africa: boiling-water apparatus, and 2 B. P. thermometers; value, 5*l.*—Lieut. C. Congreve, R.N., Paraguay, South America: a sextant, 6 in.; artificial horizon, large, Capt. C. George's pattern; value, 15*l.*

1876.	£	s.	d.	£.	s.	d.	£.	s.	d.
Balance in Bankers' hands 31st Dec. 1875 (deducting cheques not presented) ..				1012	7	5			
Ditto Accountant's Ditto				32	16	1	1,045	3	6
Subscriptions:—									
For the current year ..	3670	13	0						
Arrears	565	18	0						
Paid in Advance	542	0	0	4778	11	0			
Entrance Fees				906	0	0			
Life Compositions				1425	0	0	7,109	11	0
Subscriptions paid in error, &c.				..	..		123	6	5
Parliamentary Grant				..	..		500	0	0
Royal Premium *..				..	..		52	10	0
Rent of Vaults				..	..		176	18	8
Sale of Publications				..	..		166	11	3
Advertisements				..	..		37	4	0
Dividends:—									
London and North-Western Railway 4 per Cent. Debenture Stock 1000*l*.				39	12	6			
North-Eastern Railway 4 per Cent. Debenture Stock 1000*l*				39	12	6			
Great Indian Peninsula Railway 5 per Cent. Stock .. .. 4000*l*.				213	15	8			
India 5 per Cent. Stock .. .. 1000*l*.				49	9	7			
Great Western Railway 4½ per Cent. Debenture Stock .. .. .. 1800*l*.				75	15	8			
Exchequer Bills .. . .. 1000*l*.				27	4	5	445	10	4
Cameron Expedition: — Special Parliamentary Grant, transferred to Cameron Expedition Fund on Feb. 6, 1877 ..				..	..		3,000	0	0
						£	12,656	15	2

1876.	£.	s.	d.	£.	s.	d.
Taxes	..	..		36	8	4
Salaries and Wages..	..	..		1,704	5	6
Library and Map-Room	..	..		406	2	9
Overpayments returned	..	..		101	17	0
Gold Medals, School Prizes, and other awards	..	..		104	14	6
Postages, parcels, &c.	..	..		250	8	11½
Office Expenses, Coals, Gas, Stationery, &c..	..	..		312	19	2½
Meetings	..	..		620	8	8
Publications, Illustrations, &c.	..	..		2,049	13	5
Furniture and Repairs	..	..		229	5	9
Expeditions:—						
Amount contributed to Cameron Expedition Fund	1000	0	0			
Insurance of the Schooner, *Frances Cameron*, employed in conveying Lieut. Cameron's followers from Loanda to Zanzibar	54	9	0	1,054	9	0
Balance in Bankers' hands Dec. 31, 1876 (deducting cheque not presented) ..	*5756	17	11			
Do. Accountant's do ..	29	4	2	5,786	2	1
				£ 12,656	15	2

* *Note*.—This sum includes the Special Parliamentary Grant of 3000*l*. transferred to the Cameron Expedition Fund, on Feb. 6th, 1877.

(Signed) REGINALD T. COCKS,
Treasurer.

Audited and found correct, April 25th, 1877.

(Signed) COTTESLOE,
RAWSON W. RAWSON,
G. BALFOUR,
H. JONES WILLIAMS,
Auditors.

ROYAL GEOGRAPHICAL SOCIETY.

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HER MAJESTY THE QUEEN.

Vice-Patron.

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1878.

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PLATEN, His Excellency Count.
RAIMONDI, Don Antonio .. .. .. Lima
RICHTHOFEN, Baron von, (Pres. Berlin Geog. Soc.), 36 Magdeburgen Strasse, Berlin
RÜPPELL, Dr. E., For. M.L.S. .. Frankfort
SALAS, Don Saturnino, Pres. Topo. Depart., Argentine Repub. .. .. Buenos Ayres
SCHERZER, Dr. Karl von.
SCHUYLER, EUGENE, Sec. U. S. Legation, Constantinople
SOLDAN, Don Mariano Felipe Paz Lima
SONKLAR, Major-General the Chev. de, Wiener Neustadt .. .. .. Vienna
STANLEY, Henry M., Esq.
STONE, Gen. C. M. P., Chief of the General Staff, Egyptian Army.. .. .. Cairo
STRUVE, Prof. Otto, .. St. Petersburg
TCHIHATCHEF, M. Pierre de, 1 Piazza degli Zuave .. ..Florence
TSCHUDI, Herr T. T. von .. .. Vienna
VÁMBÉRY, Professor Arminius .. Pesth
VASCONCELLOS É SILVA, Dr. Alfredo Casimiro de .. .. .. Rio de Janeiro
WHEELER, Lieut. G. M. Washington, U.S.
WHITNEY, J. D., Esq. (State Geologist for California), Cambridge, Massachusetts, U.S.
WILCZEK, Count .. .. .. Vienna
ZIEGLER, M. J. M. .. .. Winterthur

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FELLOWS.

(1878.)

N.B.—*Those having * preceding their names have compounded for life.*

Year of Election.		
1876		Abbott, Major-General Saunders. 2, *Petersham-terrace, Queen's-gate, S.W.*
1868		*Abbott, Wm. S. D., Esq.
1874		Abd-Ell-Rasak Bey. *Naval College, Alexandria.*
1863		Abdy, Rev. Albert, M.A. *Broad-st., Stamford; and United University Club, S.W.*
1859		Aberdare, Right Hon. Lord. 1, *Queen's-gate, S.W.; and Duffryn, Aberdare, Glamorganshire.*
1851		Abinger, W. F. Scarlett, Lord. *Guards' Club, S.W.*
1876		Abrahams, Israel, Esq. 56, *Russell-square, W.C.*
1865		Acheson, Frederick, Esq., C.E. *Wooden Bridge, Co. Wicklow.*
1872		Acland, Dr. Henry, F.R.S., D.C.L., M.D. *Oxford.*
1861	10	Acland, J. Barton Arundel, Esq. *Mount Peel, Canterbury, New Zealand. Care of A. Mills, Esq.*, 34, *Hyde-park-gardens, W.*
1874		Acland, Sir Thos. Dyke, Bart., M.P. *Killerton, Exeter; and Athenæum Club.*
1873		Acland, Lieutenant W. A. Dyke, R.N. *Care of Dr. H. Acland, Oxford.*
1873		Adams, Fras. O., Esq. (Secretary of Embassy). *Paris.*
1872		*Adams, W. J., Esq. *Care of Messrs. G. H. Payne and Co.*, 150 & 151, *Fenchurch-street, E.C.*
1876		Adams, Wm. Maurice, Esq. 13, *Bessborough-gardens, S.W.*
1878		Adderley, Augustus J., Esq. 3, *Porchester-gate, Hyde-park, W.*
1877		Adeane, Capt. E. S., R.N. 28, *Eaton-place, S.W.*
1873		Adkins, Thomas, Esq. *H.M. Consul at Newchwang, China.*
1876		Agar, A. P., Esq. *Care of Messrs. Grindlay and Co.*, 55, *Parliament-street, S.W.*
1859	20	Ainslie, Colonel H. Francis. *Burlington-chambers*, 180, *Piccadilly, W.; and United Service Club, S.W.*
1830		*Ainsworth, W. F., Esq., F.S.A. *Ravenscourt-villa, New-road, Hammersmith, W.*
1876		Aird, David Alfred, Esq. 2, *Sussex-gardens, W.; and* 7, *Figtree-court, Temple, E.C.*
1859		Airlie, Right Hon. Earl of, K.T. *Holly-lodge, Campden-hill, Kensington, W.*
1860		Aitchison, David, Esq. 5, *Pembridge-square, Bayswater, W.*
1873		Aitken, Russell, Esq. 36, *Great George-street, S.W.*
1876		Akroyd, Colonel Edward. *Bank Field, Halifax, Yorks.*
1830		*Albemarle, Right Hon. Earl of. 11, *Grosvenor-square, W.; Quiddenham-hall, Larlingford, Norfolk; and Elvedon-hall, Suffolk.*
1862		Alcock, Sir Rutherford, K.C.B., D.C.L., &c. 14, *Great Queen-street, Westminster, S.W.; and Athenæum Club, S.W.*
1838		*Aldam, William, Esq. *Frickley-hall, near Doncaster.*

Year of Election,	
1865	30 **Aldom, Joseph R.** Esq., M.A., PH.D. *Salway-house, Leyton, Essex.*
1857	**Aldrich, Captain Robert D.**, R.N. *Windmill-road, Croydon, Surrey.*
1830	**Alexander, General Sir Jas. Ed.**, K.C.L.S., F.R.A.S., F.R.S.E., &c. (14th Regt.). *United Service Club, S.W.; and Westerton-house, Bridge of Allan, N.B.*
1873	**Alexander, W.**, Esq. *Care of Messrs. Grindlay and Co., 55, Parliament-street.*
1874	**Alexanderson, Capt. Carl.** *Care of Messrs. Bruno, Silva and Son, 35, Crutched Friars, E.C.*
1870	**Alford, Lewis**, Esq. 2, *Little Love-lane, E.C.*
1878	***Alison, James**, Esq. *Devonshire Club, St. James's, S.W.*
1872	**Allan, G. W.**, Esq. *Moss Park, Toronto, Canada. Care of Major Aylmer, 50, Jermyn-street, S.W.*
1871	***Allcroft, John D.**, Esq. 108, *Lancaster-gate, W.; Harlington, Middlesex; and Stokesay, Shropshire.*
1874	**Allen, C. F. R.**, Esq., H.M. Vice-Consul, *Shanghai. Care of G. B. Allen, Esq., 4, Paper-buildings, E.C.*
1864	40 **Allen, C. H.**, Esq. 1, *West-hill, Highgate.*
1876	***Allen, Herbert J.**, Esq., H.M. Consul, *Chinkiang.* 10, *The Norton, Tenby.*
1865	**Allen, James Pearce**, Esq. 13, *Waterloo-place, S.W.*
1873	**Allen, John Seymour**, Esq. *Woodfield, Pembroke; and Balliol College, Oxford.*
1872	**Allen, Thos. B.**, Esq. 40, *Regent's-park-road, N.W.*
1862	***Almeda, Emanuel de**, Esq. 11, *Hyde-park-gardens, W.*
1876	**Alstone, John**, Esq. *Western-road, Fortis-green, N.*
1877	***Alt, W. J.**, Esq. *Willesley, Cranbrooke, Kent; and Thatched-house Club, St. James's-street, S.W.*
1874	**Altschul, Dr.**, M.A., F. R. HIST. S. 9, *Old Bond-street, W.*
1876	**Ambler, Vincent**, Esq., M.D. *Colville-house, Colville-square, Bayswater, W.*
1874	50 **Ames, Capt. Lionel Neville Frederick.** *The Hyde, Harpenden.*
1875	**Ameuney, Professor Antonius**, F.R.A.S. 87, *Seymour-street, Hyde-park, W.*
1872	**Amstel, Jonkheer J. W. Ploos Van**, Esq. (Knight of the Order of the Netherland Lion, and His Netherland Majesty's Cons.-Gen. for the Australian Colonies and New Zealand). *Keizersgracht, No. 163, Amsterdam. Care of Messrs. Hickie, Borman and Co., 127, Leadenhall-street, E.C.*
1854	**Ancona, J. S.**, Esq. 8, *John-street, Adelphi, W.C.*
1874	**Anderson, Alex. Dunlop**, Esq. *Ardsheal, Ballachulish, Argyleshire.*
1874	**Anderson, Geo.**, Esq., Deputy Inspector-General of Army Hospitals. *Care of Sir Charles M'Grigor and Co., Charles-street, S.W.*
1867	**Anderson, Sir Henry L.**, K.C.S.I. *India-office, S.W.*
1871	**Anderson, Sir James.** 16, *Warrington-crescent, W.*
1862	**Anderson, James**, Esq. 1, *Billiter-court, City, E.C.*
1876	**Anderson, R.**, Esq. 17, *St. Helen's-place, E.C.; and Hankow, China.*
1876	60 **Anderson, Capt. S.**, R.E., C.M.G. *Horse-Guards, Whitehall, S.W.; and Junior United Service Club, S.W.*
1870	**Anderson, Wm. Jas.**, Esq. *Sans Souci, Newlands, near Cape Town, Cape of Good Hope. Care of Messrs. Sinclair, Hamilton and Co., 17, St. Helen's-place, E.C.*

Year of Election.		
1873		Anderson, Colonel W. W. 15, *Westbourne-square, Bayswater; and Lakefield Glen Urquhart, Inverness.*
1876		Andrew, Capt. Chas. W. 2, *Foxley-road, Brixton, S. W.*
1856		*Andrew, William P., Esq. 29, *Bryanston-square, W.*
1867		Andrews, G. H., Esq. *The Cedars, New Brentford.*
1866		Andrews, John R., Esq. 14, *Bryanston-square, W.*
1875		Andrews, Thomas R., Esq., J.P. 4, *Cumberland-place, Regent's-park, N. W.*
1877		Andrews, Wm., Esq., C.E. *Care of E. Andrews, Esq., Strand-on-the-Green, Chiswick, Middlesex.*
1838		Angas, George F., Esq. 48, *Norland-square, Holland-park, W.*
1873	70	Angelo, Hy. Cavendish A., Esq. *Asuncion, Paraguay.*
1875		Angier, F. J., Esq. 79, *Gracechurch-street, E.C.*
1861		Ansell, Maurice, Esq. *Hanover-square Club, Hanover-square, W.*
1853		Ansted, Prof. D. T., M.A., F.R.S., &c. 4, *Westminster-chambers, S.W.; Athenæum Club, S. W.; and The Red Towers, Melton, Woodbridge.*
1873		Anstey, George A., Esq. *Windham Club, S. W.*
1857		Anstruther, Maj.-Gen. Philip, C.B., Madras Artillery. *Airth-castle, by Falkirk, N.B.*
1864		Anstruther, Capt. R. L., Rifle Brigade. *Blue Gate, Ipswich.*
1874		*Antrim, Wm. Randal McDonnell, Earl of. *Glenarm-castle, Larne, Co. Antrim.*
1868		Arbuthnot, George, Esq. 23, *Hyde-park-gardens, W.*
1862		Arbuthnot, Lieut.-Col. George, R.H.A. 5, *Upper Eccleston-street, S. W.*
1876	80	Arbuthnot, Hugh L., Esq. 69, *Eaton-square, S. W.*
1872		Archibald, Wm. Fredk. A., Esq. 3, *Amersham-road, Putney, S. W.*
1870		Ardagh, Capt. John C., R.E. *Junior United Service Club, S. W.*
1855		*Arden, Richard Edward, Esq. *East Burnham-house, Buckinghamshire.*
1858		*Armistead, Rev. Charles John, M.A., F.S.A. *United University Club, S. W.*
1863		Armitage, Edward, Esq. 3, *Hall-road, St. John's-wood, N. W.*
1867		*Armitstead, George, Esq., M.P. *Errol-park, Errol, N. B.*
1857		Armstrong, Sir Alexander, K.C.B., LL.D., F.R.S., Director-General of the Navy Medical Department. *Admiralty, Somerset-house, W.C.; and Junior United Service Club, S. W.*
1875		Arnold, Edwin, Esq., C.S.I. *'Daily Telegraph' Office, Fleet-street, E.C.*
1875		Arnot, Hon. David. *Eskdale, Albania, Griqualand West, Cape of Good Hope.*
1876	90	Arnott, Thos. R., Esq. 38A, *King William-street, E.C.*
1876		Arrowsmith, R., Esq. *Chiltern, Victoria, Australia. Care of D. W. Kettle, Esq.*, 53, *Fleet-street, E.C.*
1873		Arthur, Colonel Sir Frederick, Bart. 24, *Queen's-gate, South Kensington, S. W.*
1863		Arthur, Captain William, R.N. *H.M.S. "Vernon," Portsmouth.*
1872		Artingstall, Geo., Esq., J.P. *Latchford-house, Warrington.*
1869		Ashbee, Edmund Wm., Esq., F.S.A. 17, *Mornington-crescent, Regent's-park, N. W.*
1870		*Ashton, Charles, Esq. *Delrow, Watford.*
1864		*Ashton, R. J., Esq. *Crown-court, Old Broad-street, E.C.*
1873		*Ashton, Captain Samuel Tudor. 7, *Palmeira-square, Brighton.*
1853		*Ashwell, James, Esq., M.A., F.G.S. 11, *Brock-street, Bath.*

Year of Election.		
1830	100	*Atkins, John Pelly, Esq., F.S.A. *Halsted-place, near Sevenoaks.*
1875		Atkinson, Alatau, Esq.
1876		Atkinson, E. T., Accountant-General. *Allahabad, N.W.P., India. Care of Miss Atkinson,* 44, *Church-road, St. Leonards-on-Sea.*
1870		Atkinson, William, Esq., F.L.S., &c. 47, *Gordon-square, W.C.*
1869		Atlee, Charles, Esq. *The Park, Ealing, W.*
1860		Attwell, Professor Henry. *Barnes, S.W.*
1859		Austen, Colonel Henry H. Godwin (24th Foot, Bengal Staff Corps). *Junior United Service Club, S.W.; and Shalford-house, near Guildford, Surrey.*
1863		Austin, John G., Esq. *Care of the Colonial Company,* 16, *Leadenhall-street, E.C.*
1854		Ayrton, Right Hon. Acton S. 1, *Courtfield-gardens, S.W.*
1874		Baber, E. Colborne, Esq., H.M. Cons. Serv., *China. Care of Foreign-office, S.W.*
1866	110	*Babington, William, Esq. *St. Kilda, Buckhurst-hill, Essex.*
1836		*Back, Admiral Sir Geo., D.C.L., F.R.S. 109, *Gloucester-place, Portman-sq., W.*
1875		*Backler, Hy. McL., Esq. *Vernon-house, Lordship-lane, Dulwich, S.E.*
1866		*Bacon, Geo. Washington, Esq. 127, *Strand, W.C.*
1873		Baden-Powell, Henry W. S., Esq. 3, *Paper-buildings, Temple, E.C.*
1864		Badger, Rev. Geo. P. 21, *Leamington-road-villas, Westbourne-park, W.*
1873		Bagge, Sir William, Bt., M.P. *Stradsett-hall, Market Downham, Norfolk.*
1857		Baillie, Major-General John (Bengal Staff Corps). *Care of Messrs. Grindlay and Co.,* 55, *Parliament-street, S.W.*
1872		*Baillie, Capt. Wm. Hunter. 43, *Norfolk-square, W.*
1878		Bain, A. J. G., Esq. *Blairnairn, Hellensburgh, N.B.*
1875	120	*Bain, Sir James, Knt. 2, *Park-terrace, Glasgow.*
1873		Baines, W. Mortimer, Esq. *Bell-hall, York.*
1875		*Baker, George, Esq. 66, *Mark-lane, E.C.; and Snaresbrook.*
1861		*Baker, John, Esq.
1865		Baker, Sir Sam. White, Pasha, F.R.S. *Sandford Orleigh, nr. Newton Abbot, Devon.*
1877		Baker, Rev. Sir Talbot Hastings B., Bart. *Ranston, near Blandford, Dorset.*
1876		Baker, Colonel T. D., C.B. *Army and Navy Club, Pall-mall, S.W.*
1877		Baker, Rev. Wm. 4, *Clapton-square, Hackney.*
1855		*Baker, Major W. T. *Junior United Service Club, S.W.*
1873		Baker-Cresswell, G. George, Esq. 49, *Cadogan-place, S.W.*
1878	130	Baldwin, A. Chas., Esq. 37, *Chester-square, S.W.*
1861		Balfour, Colonel David. *Balfour-castle, Kirkwall, N.B.*
1876		Balfour, Frederick Henry, Esq. *Shanghai. Care of H. Balfour, Esq., The Hollies, Bromley.*
1847		Balfour, Gen. Sir George, R.A., K.C.B., M.P. 6, *Cleveland-gardens, Hyde-park, W.; and Oriental Club, Hanover-square, W.*
1870		Balfour, Captain George M., R.N. *United Service Club, Pall-mall, S.W.*
1853		Balfour, John, Esq. 13, *Queen's-gate-place, S.W.*
1876		Ball, Arthur Edmund, Esq. *Stanhope-villa, Charlwood-road, Putney, S.W.*

Year of Election.

1860 Ball, John, Esq., F.R.S. 10, *Southwell-gardens, South Kensington.*

1876 Ball, John B., Esq. *Carisbrooke-lodge, St. John's-road East, Putney, S.W.*

1872 Balls, W. H., Esq. 20, *Anerley-road, Anerley, S.E.*

1852 140 Bancroft, Col. W. C. (16th Regt.). *Care of Sir C. M'Grigor and Co., Charles-street, S.W.*

1873 Bandini, His Highness Prince Giustiniani. *Rome. Care of Messrs. Baring Brothers and Co.*, 8, *Bishopsgate-street-within, E.C.*

1878 Banks, Henry B., Esq. 31, *Lombard-street, E.C.*

1875 Bannatyne, Neil, Esq. 4, *Earl's-court-square, South Kensington.*

1872 Barber, Wm. Gambridge, Esq. *Crossley Orphan Home and School, Savile-park, Halifax.*

1874 Barbour, W. Boyle, Esq. *Springvale, Hilton-lane, Prestwich, near Manchester.*

1869 Barchard, Francis, Esq. *Horsted-place, Uckfield.*

1873 Barclay, Hugh G., Esq. *Monkhams, Woodford, Essex.*

1870 Barclay, Wm. L., Esq., B.A. *Leyton, Essex.*

1863 Barford, A. H., Esq., M.A. 1, *Cornwall-terrace, Regent's-park, N.W.*

1835 150 *Baring, John, Esq. *Oakwood, Chichester.*

1870 Barkly, Sir Henry, G.C.M.G., K.C.B. 25, *Queen's-gate-terrace, S.W.*

1862 Barlee, Frederick Palgrave, Esq., C.M.G. (Governor of British Honduras). *Care of G. Lawrence, Esq.*, 12, *Marlborough-road, Lee, S.E.*

1868 Barlow, Frederick Thomas Pratt, Esq. 26, *Rutland-gate, S.W.*

1871 Barnes, Robert, Esq., M.D. 31, *Grosvenor-street, W.*

1872 Barnett, Edward Wm., Esq.

1867 *Barns, John W., Esq. *Bhawulpore, Punjaub, India; care of Messrs. Grindlay*, 55, *Parliament-street, S.W.*

1870 Barr, Edward G., Esq. 76, *Holland-park, W.; and* 36, *Mark-lane, E.C.*

1873 Barrett, Benjamin, Esq. *Albert-cottage, Framlingham, Suffolk.*

1875 Barrett, Howard, Esq., M.R.C.S. 3, *Tavistock-square, W.C.*

1859 160 Barrington, George, Viscount, M.P. 19, *Hertford-street, W.*

1867 *Barrington-Ward, Mark J., Esq., B.A., F.L.S. (Her Majesty's Inspector of Schools). *St. Winifred's, Lincoln; and United University Club, S.W.*

1833 Barrow, John, Esq., F.R.S., F.S.A. 17, *Hanover-terrace, Regent's-park, N.W.*

1877 Barrow, Reuben Vincent, Esq. *Sydney-lodge, Croydon.*

1878 Barrow, Samuel, Esq., jun. *Lorne-house, Red-hill, Surrey.*

1863 Barry, Alfred, Esq. *Mayfield, Shortlands, Kent.*

1857 Bartholomew, John, Esq. 17, *Chambers'-street, Edinburgh.*

1862 Barton, Alfred, Esq., M.D. *Oriental Club, W.; and Myskyns, Ticehurst, Hawkhurst.*

1874 Barton, Dr. Geo. Kingston. *Fulbeck, Grantham.*

1837 *Bateman, James, Esq., F.R.S., F.L.S. 9, *Hyde-park-gate South, S.W.*

1876 170 Bateman, John, Esq. *Great Bromley-lodge, Colchester.*

1859 Bateman, John F., Esq., C.E., F.R.S. 16, *Great George-street, Westminster, S.W.*

1875 Bates, Major C. E. *Care of Messrs. Grindlay and Co.*, 55, *Parliament-street, S.W.*

1873 Bates, General Henry, C.B. 2, *Sussex-place, Hyde-park, W.*

Year of Election.		
1866		Bateson-de-Yarburgh, George, Esq. *Heslington-hall, York.*
1877		Batt, Edward W., Esq. 20, *Great Winchester-street, E.C.*
1873		Batten, Henry Howard, Esq. 11, *Scarsdale-villas, Kensington, W.; and Junior Carlton Club, Pall-mall, S.W.*
1866		Batten, John H., Esq. 5, *Mansten-terrace, Heavitree, Exeter.*
1858		Baxendale, Joseph H., Esq. *Worplesdon, Guildford.*
1867		Baxter, Richard, Esq., Barrister-at-Law. 32, *Leinster-gardens, Bayswater, W.*
1863	180	Bayley, H., Esq. *Peninsular and Oriental Co., Leadenhall-street, E.C.*
1873		*Baylis, Capt. E. W. D. *Care of T. H. Baylis, Esq., Q.C.,* 2, *Paper-buildings, Inner Temple, E.C.*
1862		Bayly, Maj.-Gen. John, R.E., C.B. *Ordnance Survey Office, Southampton.*
1872		*Baynes, A. Henry, Esq. 19, *Castle-street, Holborn, E.C.*
1862		Baynes, Maj.-Gen. R. Stuart. *Army and Navy Club, S.W.; and* 38, *Jermyn-street, S.W.*
1872		*Baynes, Wm. Wilberforce, Esq., D.L. *Campbelton-house, Croydon.*
1868		Baynton, Captain Edward. *Trafalgar-lodge, Shirley, Southampton.*
1874		Beach, W. J., Esq. 24, *Fenchurch-street, E.C.*
1871		Beadon, Sir Cecil, K.C.S.I. 4, *Lexham-road, Kensington, W.*
1874		Beall, Geo., Esq., Secretary Local Marine Board. *Liverpool.*
1874	190	Beardmore, Nathaniel St. B., Esq. 30, *Great George-street, S.W.*
1872		Beaton, Capt. John. 13, *Palace-gardens-terrace, W.*
1854		*Beaufort, William Morris, Esq., F.R.A.S., F.L.S., F.S.S. *Athenæum Club, S.W.*
1875		Beaumont, A. R. de, Esq. 19, *St. John's-park, Highgate, N.*
1856		*Beaumont, John Aug., Esq. 81, *Lancaster-gate, W.; and Wimbledon-park-house, Wimbledon, S.W.*
1877		Beaumont, Commander Lewis A., R.N.
1870		*Beaumont, Somerset, Esq. *Hurstcote, Shere, near Guildford.*
1851		*Beaumont, Wentworth B., Esq., M.P. 144, *Piccadilly, W.; and Bretton-park, Wakefield.*
1872		Beavan, Lieut. Reginald. *Messrs. Grindlay and Co.,* 55, *Parliament-street, S.W.*
1867		*Beazley, Michael, Esq., M.I.C.E. *Care of J. D. Campbell, Esq.,* 8, *Storey's-gate, S.W.*
1871	200	Beazley, Captain Geo. G. (83rd Regiment). *Army and Navy Club, S.W.*
1865		Bebb, Horatio, Esq. 13, *Gloucester-place, W.; and Leamington.*
1870		*Bective, Thomas, Earl of. 35, *Dover-street, W.; and Underley-hall, Kirkby Lonsdale, Westmoreland.*
1875		Bedbrook, W. H., Esq. *Blenheim-house, Wimbledon, S.W.*
1859		Bedford, Rear-Admiral G. Augustus. *South-view, Widmore-road, Bromley, Kent.*
1874		Beech, Geo. Müller, Esq. *Care of George Kohle, Esq.,* 100, *Lenthall-road, Dalston, E.*
1870		*Beer, Julius, Esq. 27, *Portland-place, W.*
1861		*Begbie, James, Esq. 2, *East-India-avenue, Leadenhall-street, E.C.*
1860		Begbie, Thomas Stirling, Esq. 36, *Wallbrook, E.C.*

1853 Belcher, Rev. Brymer. *St. Gabriel's, Pimlico, S.W.*
1874 210 Bell, H. Douglas, Esq. 4, *Albion-terrace, Cleethorpes, Lincolnshire.*
1875 *Bell, Joshua P., Esq. 12, *Albemarle-street, W.*
1876 Bell, Thomas, Esq. 15, *Upper-park-road, Haverstock-hill, N.W.*
1868 Bell, Wm. A., Esq., B.A., M.D. *New University Club, St. James's-street, S.W.*
1871 Bell, Major W. M. *Belgrave-mansions, S.W.*
1874 Bell, William Moore, Esq. *Wigton, Cumberland.*
1864 Bellamy, Edward, Esq. 14, *Buckingham-street, Adelphi, W.C.*
1872 Bellville, Alfred, Esq. 20, *Penn-road-villas, Holloway, N.*
1863 Belmore, Right Hon. The Earl of, K.C.M.G. *Governor of New South Wales.*
1873 Benjamin, Horace B., Esq. 169, *New Bond-street, W.*
1870 220 Benjamin, Joseph, Esq.
1875 Benke, Albert, Esq., M.A. 9, *Charles-street, St. James's, S.W.*
1857 Bennett, J. Risdon, Esq., M.D. 22, *Cavendish-square, W.*
1872 Bennie, A., Esq. 7, *Broad Sanctuary, Westminster, S.W.*
1875 Benson, John, Esq. *Vernon-house, Gunnerside, Reeth, Yorkshire.*
1856 *Benson, William, Esq. *Langtons, Alresford, Hants.*
1830 Bentham, George, Esq., Pres. L.S. 25, *Wilton-place, S.W.*
1874 Bentinck, Major-General A. Cavendish. *East-court, Wokingham, Berks; and 5, Grosvenor-crescent, S.W.*
1868 Bentley, George, Esq. *Upton-park, Slough.*
1870 Benyon, Wm. H., Esq. *West-lodge, Ripon.*
1859 230 Berens, H. Hulse, Esq. *Sidcross, Foot's Cray, Kent.*
1865 Bernard, P. N., Esq. 37, *Connaught-square, Hyde-park, W.*
1876 Berryman, Edwin W., Esq. 32, *Great St. Helen's, E.C.*
1872 Berthon, Peter Hy., Esq. 20, *Margaret-street, Cavendish-square, W.*
1871 Best, Commr. Jno. Chas. *Plas-yn-Vivod, Llangollen.*
1863 Best, William, Esq. *Kelstone, Millbrook, S. Hants.*
1867 Bethune, Alexander M., Esq. *Otterburn, Hamlet-road, Upper Norwood; and 122, Leadenhall-street, E.C.*
1842 *Bethune, Adm. C. R. Drinkwater, C.B. 4, *Cromwell-rd., S. Kensington, S.W.*
1836 Betts, John, Esq. 21, *Freegrove-road, Camden-road, N.*
1866 Bevan, William, Esq. 12, *Bolton-gardens, South Kensington, S.W.*
1876 240 Bevington, Henry Geo., Esq. *Ferndale-house, Lee, S.E.*
1876 Bevington, Herbert S., Esq., B.A. *Ferndale-house, Lee, S.E.*
1877 Bianchi, The Marchese. *Hanover-square Club, W.*
1873 *Bibby, Edward, Esq. *Care of John Bibby, Esq., Hart-hill, Liverpool.*
1862 Bicker-Caarten, Peter, Esq. 30, *Northumberland-place, Bayswater, W.*
1875 Bickers, Edward, Esq., J.P. *Care of Messrs. King and Co., Cornhill, E.C.*
1876 Bickerstaff, W. M., Esq., J.P. 13, *Highbury-terrace, N.*
1871 Bickersteth, The Very Rev. Edward, D.D., Dean of Lichfield. *The Deanery, Lichfield.*
1868 *Bickmore, A. S., Esq., M.A., PH.D., Superintendent of the American Museum of Natural History. *Central-park, New York.*

Year of Election.		
1866		Bicknell, Algernon S., Esq. 23, *Onslow-gardens, South Kensington.*
1860	250	Bidder, G. Parker, Esq., C.E. 24, *Gt. George-st., S.W.; and Mitcham, Surrey.*
1871		Biddulph, Geo. Tournay, Esq. 43, *Charing-cross, S.W.*
1874		Biddulph, John, Esq. *Swansea.*
1865		Bidwell, Charles Toll, Esq. *Foreign-office, S.W.*
1859		Bigge, Frederick W., Esq. *Wavendon-house, Woburn.*
1868		Biggs, C. H. Walker, Esq. 7, *Freelands-road, Bromley, Kent.*
1876		Biggs, Jas., Esq., R.N. 15, *Thurloe-place, S. Kensington, S.W.*
1876		*Bigg-Wither, T. P., Esq., C.E. *Pembury-vicarage, Tunbridge Wells.*
1850		Bigsby, John J., Esq., M.D., F.R.S. 89, *Gloucester-place, Portman-square, W.*
1860		Birch, H. W., Esq. *Belgrave-mansions, Grosvenor-gardens, S.W.*
1858	260	Birch, John William, Esq. 9^{D}, *New Broad-street, E.C.; and* 27, *Cavendish-square, W.*
1862		*Birchill, Captain B. H. H. *Junior Carlton Club, S.W.*
1872		*Bird, Richard, Esq. *Holt-house, Fulham, S.W.*
1874		Birdwood, Geo., Esq., M.D., C.S.I. *India Museum, South Kensington, S.W.; and Acton, W.*
1875		Birkbeck, Edw., Esq. *Horstead-hall, Norwich.*
1878		Birks, Harry William, Esq. 161, *Brecknock-road, Tufnell-park, N.W.*
1867		*Bischoffsheim, Henri Louis, Esq. 75, *South Audley-street, W.*
1858		Bishop, George, Esq., F.R.A.S. *Union Club, S.W.; and The Meadows, Twickenham, S.W.*
1861		Bishop, James, Esq. 11, *Portland-place, W.*
1876		Bishop, James, Esq. *Forest-row, Leytonstone.*
1870	270	Bishop, Wm. Henry, Esq. 8, *Prince of Wales-terrace, Kensington-palace, W.*
1867		Bisson, Capt. Frederick S. de Carteret. 70, *Berners-street, W.*
1870		Black, Andrew H., Esq. 23, *Royal-crescent, Glasgow.*
1860		*Black, Francis, Esq. 6, *North-bridge, Edinburgh.*
1878		Black, Major Geo. Robt. Stewart. *Roxeth, Harrow; and Junior United Service Club, Charles-street, S.W.*
1876		Black, Maj.-Gen. Jas. 14, *St. James's-square, S.W.*
1867		Black, Thomas, Esq., Superintendent P. and O. Steam Navigation Company's Dockyard. 14, *Longridge-road, South Kensington, S.W.*
1870		Blackie, Thos. M., Esq., F.S.A. *Chipping-hill School, Witham, Essex.*
1849		Blackie, W. Graham, Esq., PH. D. 17, *Stanhope-street, Glasgow.*
1871		Blackmore, W., Esq. *Founder's-court, Lothbury, E.C.*
1862	280	*Blackstone, Frederick Elliot, Esq., B.C.L. *British Museum, W.C.*
187		Blagden, Robert, Esq. *Junior Carlton Club, Pall-mall, S.W.*
1869		Blaine, Henry, Esq. 11, *Gledhow-gardens, South Kensington, S.W.*
1874		Blair, Major H. F., R.E. 1, *Clarendon-place, Hyde-park-gardens, W.*
1865		Blake, Brig.-Gen. H. W. 10, *Stanhope-street, Hyde-park-gardens, S.W.*
1857		*Blake, Wollaston, Esq., F.R.S. 8, *Devonshire-place, W.*
1872		Blakemore, Ramsey, Esq. *Wimbledon, S.W.*
1861		*Blakeney, William, Esq., R.N. *Secretary to Hydrographic-office, S.W.*

Year of Election.

1876 Blakeney, Captain W. A. F.
1868 Blakiston, Matthew, Esq. 18, *Wilton-crescent, S. W.*
1857 290 Blakiston, Captain Thomas, R.A. 18, *Wilton-crescent, S. W.*
1868 Blanc, Henry, Esq., M.D., &c. *Care of Messrs. H. S. King and Co.*, 45, *Pall-mall, S. W.*
1874 Blanch, Jno., Esq. *Care of W. H. Blanch, Esq.*, 11, *Denman-road, Peckham, S.E.*
1873 *Blanford, W. T., Esq., F.G.S. *Geological Survey-office, Calcutta. Care of Messrs. Trübner and Co., Ludgate-hill, E.C.*
1857 Blanshard, Richard, Esq. *Fairfield, Lymington, Hants.*
1839 *Blewitt, Octavian, Esq. 10, *John-street, Strand, W.C.*
1864 Blore, Edward, Esq., D.C.L., F.R.S., F.S.A., &c. 4, *Manchester-square, W.*
1875 Blount, Edward, Esq., C.B. 28, *Old Burlington-street, W.; and* 61, *Rue de Courcelles, Paris.*
1866 Blow, William Wootton, Esq. *Oak-lodge, Ryden's-road, Walton-on-Thames.*
1868 Blumberg, George F., Esq. *Mansfield-house, Clifton-gardens, Maida-vale, W.*
1872 300 *Blundell, Charles Weld, Esq. *Ince, Blundell-hall, Great Crosby; and Brooks's Club, S. W.*
1837 *Blunt, Jos., Esq.
1863 *Blunt, Wilfred S., Esq. *Worth, Crawley, Sussex.*
1871 Blyth, Henry, Esq. 53, *Wimpole-street, W.*
1868 Blyth, Philip P., Esq., J.P. 53, *Wimpole-street, W.*
1871 *Bodenham, Chas de la Barre, Esq. *Rotherwas, Hereford,*
1858 Bohn, Henry G., Esq. 18, *Henrietta-street, Covent-garden, W.C.; and North-end-house, Twickenham.*
1874 Boileau, Colonel G. W. *Stanfield-hall, Wymondham.*
1862 Bolton, Lt.-Colonel Francis John. 4, *Broad Sanctuary, S. W.*
1877 *Bolton, John, Esq. 13, *Long Acre, W.C.*
1861 310 Bompas, George Cox, Esq. 15, *Stanley-gardens, Kensington-park, W.*
1861 Bonney, Charles, Esq. *Adelaide, Australia.*
1858 Bonnor, George, Esq. 49, *Pall-mall, S. W.; and* 2, *Bayswater-terr., Kensington-square, W.*
1865 Bonwick, James, Esq. *St. Kilda, Melbourne. Care of W. Beddow, Esq.*, 22, *South Audley-street, W.*
1872 Booker, Samuel, Esq. 47, *Albany, Old Hall-street, Liverpool.*
1866 *Booker, Wm. Lane, Esq. H.B.M. Consulate, San Francisco. *Care of Messrs. King and Co.*, 45, *Pall-mall, S. W.*
1876 Boor, Geo. C., Esq. *Leonard-house, Green-lanes, Stoke-Newington, N.*
1874 Booth, John, Esq. *Training College, Exeter.*
1878 Booth, Stephen, Esq. 18, *Blomfield-street, Upper Westbourne-terrace, W.*
1875 Borlase, Capt. Jno. 2, *Upton-villas, Haven-green, Ealing, W.*
1845 320 *Borrer, Dawson, Esq. *Altmont Ballon, Co. Carlow, Ireland.*
1856 *Botcherby, Blackett, Esq., M.A. *Norfolk-house*, 38, *Albion-road, Dalston, E.*
1878 Bourgho, Thos. J. de, Esq. 161, *Brecknock-road, Tuffnell-park, N. W.*
1875 Bourne, Geo., Esq. *Brisbane, Queensland. Care of Mr. John Taylor*, 110, *Fenchurch-street, E.C.*

Year of Election.		
1871		Bourne, John, Esq., C.E. 21, *Richmond-road, Bayswater, W.*
1874		Bourne, Robert, Esq., J.P. *Grafton-manor, Bromsgrove.*
1872		Bousfield, William, Esq., M.A. 33, *Stanhope-gardens, Queen's-gate, S.W.*
1860		Boustead, John, Esq. 34, *Craven-street, Strand, W.C.*
1866		*Boutcher, Emanuel, Esq. 12, *Oxford-square, Hyde-park, W.*
1865		Bouverie, P. P., Esq. 32, *Hill-street, Berkeley-square, W.*
1876	330	Bowden, A., Esq. 390, *St. Vincent-street, Glasgow.*
1867		Bowell, Rev. Wm. *Chandos-house, Hereford.*
1861		*Bowen, Charles Christopher, Esq. *Christchurch, Canterbury, New Zealand. Care of A. O. Ottywell, Esq., 7, Westminster-chambers, S.W.*
1854		*Bowen, Sir George Ferguson, G.C.M.G., M.A., Governor of Victoria. *Care of Messrs. Cocks, Biddulph and Co., 43, Charing-cross, S.W.; and Athenæum Club, Pall-mall, S.W.*
1871		*Bowers, Captain Alexander. *Care of Messrs. Fraser and Co., Penang.*
1871		Bowes, John, Esq. *Warrington, Lancashire.*
1862		Bowie, John, Esq. *Conservative Club, S.W.*
1869		Bowker, James Henry, Esq. *Basutoland, South Africa. Care of Messrs. King and Co., Cornhill, E.C.*
1878		Bowles, John, Esq. *Landport, Portsmouth.*
1868		Bowly, William, Esq. *Cirencester.*
1876	340	Bowman, Wm., Esq., F.R.S. 5, *Clifford-street, W.*
1865		Bowring, John Charles, Esq. *Forest-farm, Windsor Forest.*
1866		Bowring, Samuel, Esq. 1, *Westbourne-park, W.*
1868		Bowser, Alfred T., Esq. *Sunnyside, Kenninghall-road, Upper Clapton.*
1845		*Boyd, Edward Lennox, Esq., F.S.A. 35, *Cleveland-square, Hyde-park, W.*
1876		Boyd, Nelson, Esq. 8, *Queen Anne's-gate, S.W.*
1877		Boyd, Dr. R. *Southall-park, Middlesex.*
1874		Boyd, William, Esq., M.A., F.R.S.E., F.S.A., &c. *Peterhead, Aberdeenshire.*
1876		Boyer, George Phelps, Esq. 8, *Warwick-crescent, Maida-hill, W.*
1869		Boyle, Richard Vicars, Esq., C.S.I., Engineer in Chief to the Government Railways and Telegraph. *Japan. Care of Messrs. Grindlay and Co., 55, Parliament-street, S.W.*
1874	350	Boyson, Ambrose P., Esq. *East-hill, Wandsworth, S.W.*
1876		*Bradshaw, Surg.-Major A. F. *Simla, India. Care of Messrs. Holt and Co., 17, Whitehall-place, S.W.*
1870		*Bragge, William, Esq., C.E. *Shirle-hill, Hamstead-road, Birmingham.*
1862		Braithwaite, Isaac, Esq. 27, *Austin Friars, E.C.*
1863		*Bramley-Moore, John, Esq. *Langley-lodge, Gerrard's-cross, Bucks.*
1859		*Brand, James, Esq. 109, *Fenchurch-street, E.C.*
1868		Brand, James Ainsworth, Esq. 12, *Hereford-gardens, Park-lane, W.*
1874		Brand, Jno. Hy., Esq. President of the Orange Free State Republic, S. Africa. *Care of Henry Blyth, Esq., 53, Wimpole-street, W.*
1872		Brander, Captain William M. (24th Foot). *Army and Navy Club, Pall-mall, S.W.*
1867		Brandis, Dr. D., F.L.S. *Director of Forests, Calcutta. Care of W. H. Allen, Esq., 13, Waterloo-place, S.W.*

Year of Election		
1876	360	Brandon, David, Esq. 24, *Berkeley-square, W.*
1874		*Brandreth, Hy. P., Esq. *Standish-rectory, Wigan, Lancashire.*
1875		Branson, W. Powell, Esq. 23, *Rectory-grove, Clapham, S.W.; and* 155, *Fenchurch-street, E.C.*
1877		Brass, Emil, Esq. *Care of Messrs. Blatzpiel, Stamp and Heacock,* 9, *Warwick-court, Holborn, W.C.*
1871		*Brassey, Thos., Esq., M.P. 24, *Park-lane, W.; and Normanhurst-court, Battle.*
1874		Bray, Joseph, Esq., C.E. 51, *Queen's-gate-gardens, S.W.*
1859		Braybrooke, Philip Watson. *Assistant Colonial Secretary, Ceylon. Messrs. Price and Co., Craven-street, W.C.*
1875		Brazza, Pierre Savorgnan de. *Paris.*
1874		Brent, Algernon, Esq. *Audit-office, Somerset-house, W.C.*
1834		*Breton, Commr. Wm. Henry, R.N., F.G.S. 15, *Camden-crescent, Bath; and The Rectory, Charmouth, Dorset.*
1876	370	Brett, Right Hon. Sir W. Baliol, Knt. 6, *Ennismore-gardens, Prince's-gate, S.W.*
1876		Bridal, Walter Geo., Esq. *Granville C. School, St. Lawrence-on-Sea.*
1867		Bridge, John, Esq. *Heatley-house, near Lymm, Cheshire.*
1874		Bridgeman, Granville, Esq. *Holme-lodge, Balham-road, Upper Tooting; and Junior Conservative Club, King-street, St. James's.*
1876		Bridger, R. Lowther, Esq. *New University Club, St. James's-street.*
1873		Bridger, Captain W. Milton, R.N. *Army and Navy Club, S.W.*
1858		Bridges, Nathaniel, Esq. *Blackheath-park, S.E.*
1877		*Bridges, Commander W. B., R.N. *H.M.S. "Wolverine," Australia. Care of Messrs. J. W. Bridges and Sons,* 5a, *Warnford-court, E.C.*
1852		*Brierly, Oswald W., Esq. 38, *Ampthill-square, N.W.*
1865		Briggs, Colonel J. P. *Bonjedward-house, Jedburgh.*
1861	380	*Bright, Sir Charles T., F.R.A.S. 11, *Delahay-street, Westminster, S.W.*
1868		Bright, Henry Arthur, Esq. *Ashfield, Knotty Ash, Liverpool.*
1860		Bright, James, Esq., M.D. 12, *Wellington-square, Cheltenham.*
1876		Bright-Smith, Rev. G. Aug. *Buscot-lodge, Maida-hill, W.*
1854		Brine, Colonel Frederic, R.E., K.T.S., Assoc. Inst. C.E., F.Z.S., Executive Engineer, Punjaub. *Army and Navy, Athenæum, R.A. and R.E., and United Service Clubs, S.W.; and Garrick Club, W.C.*
1856		Brine, Captain Lindesay, R.N. *Boldre-house, Lymington, Hants; and United Service Club, S.W.*
1861		Bristowe, Henry Fox, Esq. 6, *Chesham-place, S.W., and* 22, *Old-square, Lincoln's-inn, W.C.*
1875		*Broadmead, Jas., Esq., B.A. 20, *Davies-street, Berkeley-square; and Enmore-park, Bridgwater.*
1861		Brodie, Walter, Esq. *Orsett-house, Orsett-terrace, Hyde-park, W.*
1861		Brodie, William, Esq. *Eastbourne, Sussex.*
1874	390	Brodribb, William Adams, Esq. *Bank of Australasia, Threadneedle-street, E.C.*
1863		*Brodrick, The Hon. George C. 32A, *Mount-street, W.*
1874		Brogden, James, Esq. 21, *Queen Anne's-gate, Westminster, S.W.*
1876		Brooke, Commr. A. T., R.N. *Ashbrooke, Brookboro', Lisnaskea, Ireland.*

Year of Election.		
1874		Brooke, Chas., Esq. (Rajah of Sarawak).
1864		*Brooke, Sir Victor A., Bart. *Colebrooke-park, Co. Fermanagh, Ireland.*
1875		Brooke, Capt. W. Saurin (Beng. Staff Corps).
1872		Brookes, Clifford J., Esq. *The Grange, Nightingale-lane, Clapham-common, S.W.*
1862		Brookes, Thomas, Esq. *Mattock-lane, Ealing, W.*
1856		*Brooking, Marmaduke Hart, Esq. 11, *Montagu-place, Bryanston-square, W.*
1877	400	Brooks, Joseph, Esq. *Survey Office, Adelaide, South Australia.*
1876		Brooks, Robert Alexander, Esq. *Conservative Club, St. James's-street, S.W.*
1870		*Brooks, Wm. Cunliffe, Esq., M.P., M.A., F.S.A., &c. 5, *Grosvenor-square, W.; Barlow-hall, near Manchester; and Forest of Glen-Tanar, Aboyne, Aberdeenshire.*
1863		*Broughall, William, Esq. *Broadwater, Down, Tunbridge Wells.*
1856		*Brown, Daniel, Esq.
1868		Brown, Colonel David (Madras Staff Corps). *India.*
1874		Brown, Rev. Dixon. 28, *Queen's-gate, S. Kensington, S.W.*
1877		Brown, E. A., Esq. *Burton-on-Trent.*
1877		Brown, Rev. George. *Care of the Wesleyan Missionary Society,* 17, *Bishopsgate-street-within, E.C.*
1877		Brown, Henry Rowland, Esq. 56, *Lincoln's-inn-fields, W.C.; and Oxley-grove, Stanmore.*
1874	410	Brown, J. B. Esq. 90, *Cannon-street, E.C.; and Bromley, Kent.*
1865		*Brown, James R., Esq., F.R.S.N.A., Copenhagen. 84, *Caversham-road, N.W.*
1861		*Brown, John Allen, Esq. *Dahlwell-lodge, Kent-gardens, Ealing, W.*
1867		Brown, Richard, Esq., C.E. 115, *Lansdowne-road, Notting-hill, W.*
1867		Brown, Robert, Esq., M.A., PH.D., F.L.S., &c. 26, *Guilford-road, Albert-square, S.W.*
1858		*Brown, Thomas, Esq. 8, *Hyde-park-terrace, Hyde-park, W.*
1876		*Brown, Rev. Thos. E. *Clifton-college, Bristol.*
1859		Brown, William, Esq. *Quarry-hill-house, Tonbridge, Kent.*
1863		Browne, H. H., Esq. *Moor-close, Binfield, Bracknell.*
1858		*Browne, John H., Esq. *Glenlus, Bays-hill, Cheltenham.*
1869	420	Browne, Samuel Woolcott, Esq. 58, *Porchester-terrace, Hyde-park, W.*
1864		*Browne, Captain Wade. 35, *Charles-street, Berkeley-square, W.*
1874		Browne, Walter Raleigh, Esq., C.E. *Savile Club,* 15, *Savile-row, W.*
1870		Browne, Wm. A. Morgan, Esq. 116, *Piccadilly, W.*
1877		Browne, Rev. W. E. *West Walton, Wisbeach.*
1858		Browne, William J., Esq. *Merly-house, Wimborne, Dorsetshire.*
1869		Browning, G. F., Esq. *Care of James Easton, Esq., Kench-hill, near Tenterden, Kent.*
1852		Browning, H., Esq. 73, *Grosvenor-street, Grosvenor-square, W.; and Old Warden-park, Biggleswade.*
1856		*Browning, Thomas, Esq. 6, *Whitehall, S.W.*
1863		Brunton, John, Esq., M.I.C.E., F.G.S. 13A, *Great George-street, S.W.*
1873	430	Brunton, R. H., Esq., F.G.S., &c. 1, *Oxford-villas, Balham, S.W.*

Year of Election.		
1856		Bryant, Walter, Esq., M.D., F.R.C.S. 23A, *Sussex-square, Hyde-park-gardens, W.*
1867		*Buccleuch, His Grace the Duke of, K.G., F.R.S. *Dalkeith-palace, near Edinburgh; and Montagu-house, Whitehall, S.W.*
1875		Buchanan, Andrew, Esq., M.D. 48, *Eastbourne-terrace, Hyde-park, W.*
1874		Buchanan, R. Dunlop, Esq. 16, *Porchester-terrace, W.*
1874		*Buchanan, Thos. Ryburn, Esq. *All Souls' College, Oxford.*
1869		Buckley, John, Esq. 16, *Jolimont-street, Jolimont, East Melbourne, Victoria. Care of Messrs. Dalgety, Du Croz, and Co.*, 52, *Lombard-street, E.C.*
1876		Buckley, John, Esq. *The Academy, Weaver-view, Winsford, Cheshire.*
1863		Budd, J. Palmer, Esq. *Ynisdaren, near Swansea.*
1867		*Bulger, Lieut.-Colonel George Ernest, F.L.S., F.M.S., C.M.Z.S., &c. (late 10th Foot). *Care of Messrs. Wheatley and Co.*, 156, *Leadenhall-street, E.C.*
1868	440	*Bull, William, Esq., F.L.S. *King's-road, Chelsea, S.W.*
1865		Buller, Sir Edward M., Bart., M.P. *Old Palace-yard, S.W.; and Dilhorn-hall, Cheadle, Staffordshire.*
1869		Buller, Walter L., Esq., F.L.S. 7, *Westminster-chambers, Victoria-st., S.W.*
1875		Bullinger, Rev. E. Wm. *Walthamstow, Essex.*
1863		Bullock, Captain Charles J., R.N. *Hartsbourn, Gypsy-hill.*
1875		Bullock, Rev. Wm. T., M.A. *Kensington-palace, W.*
1860		*Bunbury, Sir Charles James Fox, Bart., F.R.S. *Barton-hall, Bury St. Edmund's.*
1839		*Bunbury, E. H., Esq., M.A. 35, *St. James's-street, S.W.*
1863		Bundock, F., Esq. *Buckland-abbey, Horrabridge, S. Devon.*
1861		Burges, William, Esq. *Fethard, Co. Tipperary.*
1866	450	*Burgess, James, Esq., M.R.A.S., Archæological Reporter, &c., to Government. *Bombay.* 8, *Merchiston-terrace, Edinburgh. Care of Messrs. Trübner and Co., Ludgate-hill, E.C.*
1875		Burgoyne, John, Esq. *Wood-thorpe, Stone-bridge-park, Willesden.*
1871		*Burke, Samuel Constantine, Esq. 84, *Harbour-street, Kingston, Jamaica.*
1864		Burn-Blyth, Robert, Esq. 5, *Clifton-place, Sussex-square, W.*
1872		Burne, Lieut.-Colonel O. F. *India-office, S.W.*
1878		Burnett, Jas. Compton, Esq., M.D. 17, *Hanover-square, Birkenhead.*
1871		Burney, Commr. Chas., R.N., *Superintendent Greenwich Hospital Schools, S.E.*
1863		*Burns, John, Esq. *Castle Wemyss, by Greenock, N.B.*
1861		*Burr, Higford, Esq. 23, *Eaton-place, S.W.; and Aldermaston-court, Berkshire.*
1857		Burstal, Captain E., R.N. 9, *Park-villas, Lower Norwood, S.E.*
1872	460	Burt, Charles, Esq. *Hill-side-house, Richmond, Surrey.*
1833		*Burton, Decimus, Esq., F.R.S. 1, *Gloucester-houses, Gloucester-crescent, W.*
1859		*Burton, Capt. Richd. Fras. *Athenæum Club*; 14, *Montagu-place, Montagu-square, W.; and care of Messrs. Smart and Co.*, 16, *Basinghall-street, E.C.*
1858		Bury, Wm. Coutts, Viscount, K.C.M.G. 65, *Prince's-gate, S.W.*
1861		Bush, Rev. Robert Wheler, M.A. 29, *Milner-square, Islington, N.*
1874		Bushell, Dr. Nathaniel. *Prince's-park-school, Liverpool.*
1874		Bushell, S. W., Esq., M.D. *Poulton, Wingham, Kent.*

Busk, Capt. Hans, D.L., LL.D., F.R.S., Hon. D.C.L. Oxford. 21, *Ashley-place, S.W.; and United University Club.*
Busk, William, Esq., M.C.P., &c. 28, *Bessborough-gardens, S.W.*
Butler, Charles, Esq. 3, *Connaught-place, Hyde-park, W.*
470 Butler, E. Dundas, Esq. *Geographical Department, British Museum, W.C.*
Butler, Frank Hedges, Esq. *Hollywood, Wimbledon-park, S.W.; and* 14, *New Burlington-street, W.*
Butler, George Grey, Esq. (Civil Service Commission). 5, *Cannon-row, S.W.*
Butler, Rev. Thomas. *Wilderhope-house, Shrewsbury.*
Butler, Major W. F. (69th Regiment). *Horse Guards, S.W.*
Buxton, Francis W., Esq., B.A. 15, *Eaton-place, S.W.*
Buxton, Henry Edmund, Esq., B.A. *Bank-house, Great Yarmouth, Norfolk.*
Buxton, John H., Esq. *Brewery, Spitalfields, E.C.*
*Buxton, Sir Thomas Fowell, Bart. 14, *Grosvenor-crescent, S.W.; and Warlies, Waltham-abbey, Essex.*
Bykovski, Gryf Jaxa, Esq. *Gryf Park, Viesna Bojanov, near Bobruish, Russia.*

480 Calthorpe, The Hon. Augustus Gough. 63, *Rutland-gate, S.W.*
*Calthorpe, F. H. Gough, Lord. 33, *Grosvenor-square, W.*
Calvert, Frederic, Esq., Q.C. 38, *Upper Grosvenor-street, W.*
*Cama, Dorabjee Pestronjee, Esq. 3 *and* 4, *Winchester-street-buildings, E.C.*
Cameron, Donald, Esq., M.P. *Auchnacarry, Inverness-shire.*
Cameron, Major Donald R., R.A., C.M.G. *Malta.*
Cameron, Lieut.-General Sir Duncan Alexander, G.C.B.
Cameron, Henry Lovett, Esq. 25, *Granville-place, Portman-square, W.*
Cameron, J., Esq. 32, *Great St. Helen's, E.C.*
Cameron, R. W., Esq. *P.O. Box* 1676, *New York. Care of Messrs. Brooks and Co., St. Peter's-chambers, Cornhill, E.C.*
490 Cameron, Commr. Verney Lovett, R.N., C.B. *Shoreham-vicarage, Sevenoaks.*
*Campbell, Allan, Esq. *Melbourne Club, Melbourne.*
Campbell, C. H., Esq. 10 *Eaton-place, S.W.*
Campbell, Sir George, K.C.S.I., M.P., D.C.L. 13, *Cornwall-gardens, South Kensington, S.W.; and Athenæum Club, S.W.*
Campbell, Geo. W., Esq. 22, *Queen's-gate-gardens, S.W.*
*Campbell, James, Esq. *Park-farm, Hendon, Middlesex; and* 37, *Seymour-street, W.*
Campbell, James, Esq. 17, *Queen's-gate, S.W.*
Campbell, James, Esq., Surgeon R.N. *The Grange, Chigwell-row, N.E.*
*Campbell, James, Esq., jun. *Cawley-priory, Chichester.*
*Campbell, James Duncan, Esq. *Peking.* 8, *Storey's-gate, St. James's-park, S.W.*
500 Campbell, Robert, Esq., J.P. 31, *Lowndes-square, S.W.; and Buscot-park, Lechlade, Gloucestershire.*
Campbell, Robert, Esq. *Lednock-bank, Comrie, Perthshire.*
Campbell, William, Esq. *New Club, Glasgow.*

Year of Election.

1856 *Campbell-Johnston, A. R., Esq., F.R.S. 84, *St. George's-square, S.W.*
1876 Campion, Frank, Esq. *The Mount, Duffield-road, Derby.*
1876 Candler, Samuel Horace, Esq. 23, *Essex-street, Strand, W.C.*
1866 Canning, Sir Samuel, C.E. *The Manor-house, Abbots Langley, near Watford, Herts.*
1864 *Cannon, John Wm., Esq. *Castle-grove, Tuam.*
1857 Cannon, Lieut.-General R. 5, *Park-villas, Folkestone.*
1877 Cantley, Nathaniel, Esq. *Botanical Gardens, Pamplemousses, Mauritius.*
1877 510 Cardi, Chas. Napoleon de, Esq. 78, *Tower-buildings, Water-street, Liverpool.*
1873 *Cardwell, Edward H., Esq. *Hillside, West Horsley, Surrey; Oxford and Cambridge and Garrick Clubs.*
1853 *Cardwell, Right Hon. Viscount. 74, *Eaton-square, S.W.*
1863 *Carew, R. Russell, Esq., J.P. *Carpenders-park, Watford, Herts; and Oriental Club, W.*
1873 Carey, Lieutenant H. C. (late I.N.). *Alma-road, Southport.*
1869 Carey, Rev. Tupper. *Fifield, Bavant, Salisbury; and* 15, *Hyde-park-gardens, W.*
1872 Carfrae, John, Esq. 28, *Norfolk-road, St. John's-wood, N.W.; and Junior Conservative Club, King-street, St. James's.*
1862 Cargill, John, Esq., Member of the Legislative Assembly of New Zealand, and Legislative Council of Otago. *Dunedin, Otago, New Zealand. Care of Messrs. Cargill, Joachim and Co.*, 28, *Cornhill, E.C.*
1863 *Cargill, Wm. W., Esq. *Lancaster-lodge, Campden-house-road, W.*
1873 *Carillon, John Wilson, Esq., F.S.A., F.S.S., &c. *Wormhill, Buxton.*
1858 520 Carlingford, Right Hon. Lord. 7, *Carlton-gardens, S.W.*
1876 Carlisle, A. D., Esq. *Haileybury-college, Hertford.*
1864 *Carmichael, Capt. L. M., M.A. (5th Lancers). *Oxford and Cambridge Club, S.W.*
1865 *Carnegie, David, Esq. *Eastbury, by Watford, Herts.*
1863 Carnegie, Commander the Hon. J., R.N. 26, *Pall-mall, S.W.*
1874 Carnegy, Patrick, Esq. *Hazlewood, Upper Norwood.*
1876 *Carr, Wm. Ward, Esq., M.D. 6, *Lee-terrace, Lee, S.E.*
1861 Carter, Lieut.-Colonel Hugh Bonham- (Coldstream Guards). *Guards' Club, S.W.; and* 7, *Howick-place, S.W.*
1868 Carter, Captain Thomas Tupper, R.E. *Care of Messrs. H. S. King and Co.*, 45, *Pall-mall.*
1873 Carter, Theodore, Esq. *Mapperley-house, Burnt-ash-hill, Lee, S.E.*
1857 530 Cartwright, Col. Henry (Grenadier Guards), M.P. *Eydon-hall, Banbury.*
1874 Cartwright, William, Esq. *Care of Office of Chinese Customs,* 8, *Storey's-gate, St. James's-park, S.W.*
1860 *Carver, Rev. Alfred J., D.D., Master of Dulwich College. *Dulwich, S.E.*
1869 Casberd-Boteler, Commr. W. J., R.N. *The Elms, Taplow; and Naval and Military Club, Piccadilly, W.*
1858 Casella, Louis P., Esq. 147, *Holborn-bars, E.C.; and South-grove, Highgate, N.*
1875 Cassels, Andrew, Esq. (Member of Council of India). 51, *Cleveland-square, Hyde-park, W.*
1874 Cassiani, Chas. Joseph, Esq. 12, *George-street, Portman-square, W.*

Year of Election.		
1877		Cates, Arthur, Esq. 7, *Whitehall-yard, S.W.*
1873		Cathcart, Major Andrew. 16, *Grosvenor-street, W.*
1872		Caton, R. Redmond, Esq., F.S.A. *Union Club; and Binbrook-house, Market-manor, Lincolnshire.*
1872	540	Cattley, Edward, Esq. *Care of Messrs. Ropes and Co,* 5, *Jeffreys-square, St. Mary-Axe, E.C.; and St. Petersburg.*
1860		Cave, Amos, Esq. *Grove-house, Cromwell-road, Brixton-rise, Surrey.*
1876		Cave, Colonel Edward. *East India United Service Club,* 14, *St. James's-square, S.W.*
1857		Cave, Captain Laurence Trent. 13, *Lowndes-square, S.W.*
1858		Cave, Right Hon. Stephen, M.P. 35, *Wilton-place, S.W.*
1874		Cave-Browne, Rev. J. *Detling-vicarage, Maidstone.*
1869		Cayley, Dr. Henry. 3, *All Saints'-road, Clifton, Bristol.*
1873		Chadwick, Jesse, Esq. *London-road, Derby.*
1874		Chadwick, Jno. O., Esq. 46, *Bolton-road, St. John's-wood, N.W.*
1863		Challis, John Henry, Esq. *Reform Club, S.W.*
1871	550	*Chalmer, Capt. Reginald (60th Royal Rifles). *Peshawur, East Indies.*
1874		Champain, Major J. U. Bateman, R.E. *Chisholm-lodge, Queen's-road, Richmond.*
1858		Champion, John Francis, Esq. *High-street, Shrewsbury.*
1876		Champney, Chas. E., Esq. *Bank Field, Halifax.*
1866		*Chandless, William, Esq. 5, *Portman-street, Oxford-street, W.*
1875		Chapelle, Count de la. 4, *Jermyn-street, St. James's, S.W.*
1870		Chapman, Capt. E. F., R.A. *Fairholme, Wimbledon, S.W.*
1863		*Chapman, Spencer, Esq. *Roehampton, S.W.*
1870		Charles, Rev. D., B.A. (Oxon), D.D. *Aberdovey, North Wales.*
1861		Charnock, Richard Stephen, Esq., PH.D., F.S.A. *Junior Garrick Club, Adelphi-terrace, W.C.*
1875	560	Chater, Geo., junr., Esq. 41, *Porchester-square, Hyde-park, W.*
1872		Chatwood, Samuel, Esq. 5, *Wentworth-place, Bolton.*
1873		Chauntrell, Fred Dundas, Esq. 63, *Lincoln's-inn-fields, W.C.*
1876		Chauvin, George von, Esq. 6, *Half-Moon-street, W.*
1864		Cheadle, Walter B., Esq., B.A., M.D. Camb. 2, *Hyde-park-place, Cumberland-gate, W.*
1873		Cheetham, Samuel, Esq. 11, *Rumford-place, Liverpool.*
1855		Cheshire, Edward, Esq. 3, *Vanbrugh-park, Blackheath, S.E.; and Conservative Club, S.W.*
1858		Chetwode, Augustus L., Esq. 3, *Charles-street, Lowndes-square, S.W.; and Chilton-house, Thame, Oxfordshire.*
1876		Cheyne, Captain Jno. P., R.N. 15, *Addison-gardens North, Kensington, W.*
1870		Chichester, Sir Bruce, Bart. *Arlington-court, Barnstaple.*
1858	570	Childers, Right Hon. Hugh C. E., M.P. 17, *Prince's-gardens, S.W.*
1856		Childers, John Walbanke, Esq. *Cantley-hall, near Doncaster.*
1857		*Chimmo, Captain William, R.N. *Westdowne, Weymouth.*
1869		Chinnock, Frederick George, Esq. 86, *Cornwall-gardens, Queen's-gate, S.W.*

Year of Election		
1874		*Cholmley, Harry Walter, Esq. *Howsham, near York.*
1877		Christie, Edward Richard, Esq. *The Beacon, Sevenoaks, Kent.*
1872		Christie, James Alexander, Esq. *Flushing, Falmouth.*
1872		Christie, T. Beath, Esq., M.D. *Ealing.*
1871		Church, Colonel Geo. Earl. 19, *Great Winchester-street, E.C.*
1830		*Church, W. H., Esq.
1849	580	Churchill, Lord Alfred Spencer. 16, *Rutland-gate, S.W.*
1856		Churchill, Charles, Esq. *Weybridge-park, Surrey.*
1870		Clapton, Edward, Esq., M.D., &c. *St. Thomas's-street, Southwark, S.E.*
1863		Clark, Lieut. Alex. J. 14, *St. James's-square, S.W.*
1870		Clark, Charles, Esq. 20, *Belmont-park, Lee, Kent, S.E.*
1872		Clark, George Thomas, Esq. *Dowlais-house, Dowlais.*
1873		Clark, Sir John, Bart. *Tillypronie, Tarland, Aberdeenshire.*
1868		Clark, John Gilchrist, Esq. *Speddoch, Dumfries, Dumfriesshire.*
1862		Clark, J. Latimer, Esq. 5, *Westminster-chambers, Victoria-street, S.W.; and Beechmont, Dulwich, S.E.*
1874		*Clark, Mathew E., Esq. 18, *Granville-place, Portman-square, W.*
1870	590	Clark, Robert, Esq. 46, *Chepstow-villas, Bayswater, W.*
1878		Clark, Stephen, Esq. 1, *Lavender-villa, Wood-street, Barnet.*
1868		Clark, William, Esq.
1859		Clark, Rev. W. Geo., M.A. *Trinity College, Cambridge.*
1865		Clark, W. H., Esq. 6, *Leinster-terrace, Hyde-park, W.*
1874		*Clark-Kennedy, Capt. Alexander W. M., F.Z.S. (late Coldstream Guards). *Craig's-house, Dumfries, N.B.; and Guards' Club, Pall-mall, S.W.*
1875		Clarke, Archibald Hy., Esq. *South-hill, Paignton, Devon.*
1859		Clarke, Col. A., R.E. *Army and Navy Club, S.W.*
1874		Clarke, Captain F. C. H., R.A. *Adair-house, St. James's-square, S.W.*
1872		Clarke, Joseph, Esq. *North-hill-villa, Highgate, N.*
1855	600	*Clarke, Rev. W. B., M.A. *Sydney, New South Wales. Care of Messrs. Trübner and Co., Ludgate-hill, E.C.*
1868		Clarke, W., Esq. 44, *Ladbroke-grove, W.*
1862		Claude, F. Eugène, Esq. *Alpina-house, Tufnell-park, N.*
1863		Clayton, Captain John W. (late 15th Hussars). 14, *Portman-square, W.*
1866		*Cleghorn, Hugh, Esq., M.D. *Stravithy, St. Andrew's.*
1871		Cleghorn, John, Esq., M.S.S., M.S.A., &c. 3, *Spring-gardens, S.W.*
1863		Clements, Rev. H. G. *United University Club, S.W.*
1870		Clements, Robert George, Esq. 97, *Victoria-park-road, E.*
1860		Clerk, Captain Claude. *Hyderabad, E. Indies.*
1858		Clermont, Thomas, Lord. 35, *Hill-street, Berkeley-square, W.; and Ravensdale-park, Newry.*
1845	610	*Cleveland, His Grace the Duke of. *Cleveland-house*, 17, *St. James's-square, S.W.*
1861		Clifford, Sir Charles. *Hatherton-hall, Cannock, Staffordshire.*
1858		Clifford, Charles Cavendish, Esq. *House of Lords, S.W.*
1871		Clifford, Henry, Esq., C.E. 1, *Lansdown-place, Blackheath, S.E.*

Year of Election

1866 Clinton, Lord Edward. *Army and Navy Club, S.W.*

1875 Clirehugh, W. P., Esq. 14, *Ladbroke-terrace, Notting-hill.*

1856 Clive, Rev. Archer. *Whitfield, Hereford.*

1863 Clowes, E., Esq. *Salisbury-square, Fleet-street, E.C.*

1874 Clowes, Capt. Frederic (30th Regiment). *St. Mary's Barracks, Chatham.*

1854 Clowes, George, Esq. *Duke-street, Stamford-street, S.E.; Charing-cross, S.W.; and Surbiton, Surrey.*

1854 620 Clowes, William, Esq. *Duke-street, Stamford-street, S.E.; Charing-cross, S.W.; and* 51, *Gloucester-terrace, Hyde-park, W.*

1861 Clowes, William Charles Knight, Esq., M.A. *Duke-street, Stamford-street, S.E.; and Surbiton, Surrey.*

1874 Clutterbuck, Robert, Esq., J.P. 8, *Great Cumberland-place, W.*

1874 Coard, Philip Aldridge, Esq. 13, *St. Mark's-square, Sundringham-road, West Hackney, E.*

1877 Coate, James, Esq. 41 *and* 42, *Lisle-street, Leicester-square, W.C.; and Chard, Somersetshire.*

1875 Coates, Edmund, Esq. 8, *Baker-street, Portman-square, W.*

1877 Coates, Walter S., Esq. *Kingswood College, Lansdowne, Bath.*

1875 Cobb, Jas. Francis, Esq. *The Brake, Torquay, Devon.*

1852 Cobbold, John Chevalier, Esq. *Athenæum Club, S.W.; and Ipswich, Suffolk.*

1859 Cochrane, Rear-Admiral the Hon. A., C.B. *Junior United Service Club, S.W.*

1873 630 *Cochrane, Kenneth, Esq. *Elmbank, Galashiels, N.B.*

1868 Cock, Edward, Esq. *Kingston-on-Thames.*

1869 *Cockburn, Captain James George (6th Regiment). *Dover.*

1877 Cockburn, J. P., Esq. *The Mount, Totnes, South Devon.*

1862 Cockerton, Richard, Esq. *Cornwall-gardens, South Kensington, S.W.*

1862 *Cockle, Captain George. 9, *Bolton-gardens, South Kensington, S.W.*

1876 *Cocks, Alf. Heneage, Esq. 5, *Radnor-place, Gloucester-square, W.*

1859 Cocks, Colonel C. Lygon (Coldstream Guards). *Treverbyn-Vean, Liskeard, Cornwall.*

1865 Cocks, Major Octavius Yorke. 86, *Park-street, Grosvenor-square, W.*

1841 *Cocks, Reginald Thistlethwayte, Esq. 43, *Charing-cross, S.W.; and* 29, *Stanhope-gardens, South Kensington, S.W.*

1876 640 *Cocks, Thos. S. Vernon, Esq. 48, *Charing-cross, S.W.*

1871 *Cockshott, Arthur, Esq., M.A. *Eton College.*

1873 Codrington, General Sir William, G.C.B. 110, *Eaton-square, S.W.*

1872 *Coe, Rev. C. C. *Highfield, Bolton-le-Moors.*

1857 Coghlan, Edward, Esq. *Training-institution, Gray's-inn-road, W.C.*

1861 Coghlan, J., Esq., Engr.-in-Chief to the Government, *Buenos Ayres. Care of H. C. Forde, Esq.*, 6, *Duke-street, Adelphi, W.C.*

1876 *Coghlan, Nav. Lieut. Jas. E., R.N. *Care of Hydrographic-office, Admiralty, S.W.*

1862 Coghlan, Gen. Sir William M., R.A., K.C.B. *Ramsgate, Kent.*

1865 Colchester, Reginald Charles Edward, Lord. 68, *Eaton-place, S.W.*

Year of Election.		
1875		Cole, Geo. Ralph Fitz-Roy, Esq *Queen Anne's-mansion, Westminster, S.W.; Wanderers' and South American Clubs, S.W.*
1868	650	Cole, William H., Esq. 64, *Portland-place, W.*
1876		Cole, Wm. Hammond, Esq. *Great Plumstead, near Norwich, Norfolk.*
1867		Colebrook, John, Esq. 17, *Walton-place, Chelsea, S.W.*
1841		*Colebrooke, Sir Thomas Edward, Bart., F.R.A.S. 37, *South-st., Park-lane, W.*
1854		Coleman, Everard Home, Esq., F.R.A.S. *Registry and Record Office,* 82, *Basinghall-street, E.C.*
1848		Coles, Charles, Esq. 86, *Great Tower-street, E.C.*
1876		Coles, James, Esq. 26, *Malvern-road, Beeston-hill, Leeds.*
1873		Coles, Jno., Esq. *Mitcham, Surrey.*
1835		*Collett, William Rickford, Esq. *Carlton Club, S.W.*
1872		Collingwood, Lieut. W. *India-office, S.W.*
1866	660	Collinson, John, Esq., C.E. 37, *Porchester-terrace, Hyde-park, W.*
1855		Collinson, Vice-Admiral Sir Richard, K.C.B. *Haven-lodge, Ealing, W.; and United Service Club, S.W.*
1871		*Collis, Capt. Gustavus W. Berry (6th Royal Regiment). *Care of Mrs. Collis, Barton-terrace, Dawlish, Devon.*
1875		Colls, Benjamin, Esq. *Sutton, Surrey.*
1878		Colomb, Captain J. C. R. *Droumquinna, Kenmare, Co. Kerry; and Junior United Service Club, S.W.*
1862		Colquhoun, Sir Patrick M. de, Q.C., LL.D. 2, *King's-Bench-walk, Temple, E.C.*
1869		Colvill, William H., Esq. (Surg. H.M. Ind. Army).
1861		*Colville, Right Hon. Lord. 42, *Eaton-place, S.W.*
1865		Colvin, Binny J., Esq. 17, *Elvaston-place, Queen's-gate, S.W.*
1868		Colvin, Captain W. B. (Royal Fusiliers).
1868	670	Combe, Lieut. B. A.
1871		Comber, Colonel A. K. (Dep.-Commissioner of Assam, Goalpara). *Care of Messrs. Woodhead and Co.,* 44, *Charing-cross, S.W.*
1864		Commerell, Admiral Sir J. E., V.C., K.C.B. *Alverbank, Alverstoke, Hants.*
1876		Congreve, Chas. R., Esq. *Care of R. J. Congreve, Esq., Carlinwark, Castle-Douglas, N. B.*
1876		Conlan, Geo. Nugent, Esq. *Tivoli-house, Kingstown, Co. Dublin.*
1861		Constable, Captain Chas. Golding, I.N. 6, *Harley-road, St. John's-wood, N.W.*
1872		*Cook, F. L., Esq. 24, *Hyde-park-gardens, W.*
1868		Cook, H., Esq., M.D., &c. *Care of Messrs. Forbes and Co.,* 12, *Leadenhall-street, E.C.*
1859		Cooke, Lieut.-Col. A. C., R.E. *Bermuda.*
1863		*Cooke, E. W., Esq., A.R.A., F.R.S., F.L.S., F.Z.S., F.G.S., Accad. Bell. Art. Venet. et Holm. Socius. *Glen-Andred, Groombridge, Sussex; and Athenæum Club, S.W.*
1856	680	Cooke, John George, Esq. 25, *Austin Friars, Old Broad-street, E.C.*
1852		Cooke, Robt. F., Esq. 50, *Albemarle-street, W.*
1860		Cooke, William Henry, Esq., Q.C. 42, *Wimpole-street, W.*

Year of Election.		
1874		Cooke, Capt. W. S. (22nd Regiment). *Malta.*
1872		*Cookson, F., Esq. *Teddington-hall, Teddington.*
1830		Cooley, William Desborough, Esq. 13, *College-place, Camden-town, N. W.*
1876		Cooling, Edwin, Esq. *Mile Ash, Derby.*
1875		Coombe, Edward, Esq. *Hillside, Willesden, N. W.*
1872		Cooper, Alfred, Esq. 9, *Henrietta-street, Cavendish-square, W.*
1872		Cooper, Commr. B. J., R.N.
1877	690	Cooper, Charles E., Esq. *Observatory-house, Kingsdown, Bristol.*
1862		Cooper, Sir Daniel. 6, *De Vere-gardens, Kensington-palace, W.*
1856		Cooper, Lieut.-Col. Edward H. (Grenadier Guards). 42, *Portman-square, W.*
1860		Cooper, Lieut.-Col. Joshua H. (7th Fusiliers). *Dunboden, Mullingar.*
1878		Cooper, Percy H., Esq. *Bullwell-hall, Nottingham.*
1874		Cooper, William White, Esq. 19, *Berkeley-square, W.*
1876		Coote, Algernon C. P., Esq., M.A. *Eton and Harrow Club, S. W.*
1857		*Coote, Vice-Admiral Robert, C.B. "*Shales,*" *Bitterne, Southampton.*
1878		Copland-Crawford, Fitzgerald Hamilton, Esq. *Sudbury-lodge, Harrow.*
1874		Copland-Crawford, Gen. R. F., R.A., F.G.S. *Sudbury-lodge, Harrow, Middlesex.*
1853	700	Copley, Sir Joseph William, Bart. *Travellers' Club, Pall-mall, S. W.*
1868		Cork, Nathaniel, Esq. *Grennel-house, Sutton, Surrey.*
1868		Corner, William Mead, Esq. *Elm-cottage, London-road, Forest-hill, S.E.*
1865		Cornthwaite, Rev. T., M.A. *Forest, Walthamstow.*
1860		Cornwell, James, Esq., PH.D. *Purbrook, Crescent-wood-road, Sydenham-hill, S.E.*
1877		Corscaden, John F., Esq. 24, *Holland-park, W.*
1868		Cory, Frederic C., Esq., M.D. *Portland-villa, Buckhurst-hill, Essex; and Nassau-place, Commercial-road, E.*
1873		Cosson, Emilius Albert de, Esq. *Junior Naval and Military Club, Pall-mall, S. W.*
1874		*Cosson, Baron de. *Pyrcroft-house, Chertsey, Surrey; and* 38, *Rue St. Dominique, St. Germain, Paris.*
1869		Coster, Guillaume F., Esq. 11, *Park-crescent, Regent's-park, N. W.*
1853	710	*Cosway, William Halliday, Esq. *Oxford and Cambridge Club, S. W.*
1875		Cotesworth, Wm., Esq. *Cowdenknowes, Roxburghshire, N. B.*
1876		Cotterill, Rev. G. E. 5, *Arlington-villas, Brighton.*
1875		Cotterill, H. B., Esq., B.A. 1, *Athol-place, Edinburgh.*
1856		Cottesloe, Right Hon. Lord. 20, *Eaton-place, S. W.; and Swanbourne, Winslow, Buckinghamshire.*
1873		Cottrill, Robert Alfred, Esq. *Spelthorne-grove, Sunbury, Middlesex.*
1877		Couch, Right Hon. Sir Richard, Knt. 25, *Linden-gardens, Bayswater-road, W.*
1873		Courtenay, J. Irving, Esq. 3, *Plowden-buildings, Temple, E. C.*
1874		*Courtney, Henry Nicholas, Esq., B.A. 2, *Little Stanhope-street, Mayfair, W.; and National Club, Whitehall-gardens, S. W.*
1875		Covington, Rev. W., Vicar of St. Luke's. *Shepherd's-bush, W.*
1875	720	Coward, Dr. John W. S. *Care of Messrs. A. B. Hill and Son*, 101, *Southwark-street, S.E.*

Year of Election.	
1862	Coward, William, Esq. *Rock-bank, Lordship-lane, Dulwich, S.E.*
1857	*Cowell, Lieut.-Col. Sir J. C., R.E., K.C.B. *Buckingham-palace, S. W.*
1854	Cowley, Norman, Esq. 4, *Montagu-place, Montagu-square, W.*
1871	Cowper, Henry Aug. (H.M. Com. Puerto Rico). *Care of Messrs. Woodhead and Co.*, 44, *Charing-cross, S. W.*
1862	*Cowper, Sedgwick S., Esq., J.P. 3, *Westminster-chambers, Victoria-street, S. W.*
1878	Cox, James, Esq. *Grange-house Academy, Leominster, Herefordshire.*
1874	Coxon, Samuel Bailey, Esq., F.G.S. *Usworth-hall, Durham.*
1865	Coysh, John S., Esq.
1870	*Cracroft, Bernard, Esq., M.A. Trin. Coll. Camb. *Oxford and Cambridge Club, S. W.; and* 1, *Stanford-row, South Kensington, S. W.*
1875	730*Cragoe, Thos. Adolphus, Esq. *Woodbury-villa, Truro.*
1867	Crane, Leonard, Esq., M.D. 7, *Albemarle-street, W.*
1877	Crane, T. H., Esq. *Sun-house, London-road, Yeovil, Somerset.*
1873	Craufurd, George Ponsonby, Esq. *Buenos Ayres; and Travellers' Club, S. W.*
1857	Craufurd, Lieut.-General James Robertson (Grenadier Guards). *Travellers' Club, S. W.; and* 36, *Prince's-gardens, S. W.*
1875	Craven, Alfred, Esq. *Brookfield-house, Folkestone.*
1848	Crawford, Robert Wigram, Esq. 71, *Old Broad-street, E.C.*
1876	Crawley, Wm. John Chetwode, Esq., LL.B., F.G.S., &c. 3, *Ely-place, Dublin.*
1873	Creswell, Alf. Aug., Esq. 1, *Capel-court, E.C.; and Radford-vicarage, Notts.*
1861	Creswell, Rev. Samuel Francis, B.D., F.R.A.S. *Principal of the High School, Dublin.*
1859	740*Creyke, Captain Richard Boynton, R.N. *Gristhorpe-hall, Filey, Yorkshire.*
1877	Crispe, James, Esq. *Leatherhead.*
1856	Croker, T. F. Dillon, Esq. 19, *Pelham-place, Brompton, S. W.*
1864	Croll, Col. A. A., C.E. *Granard-lodge, Roehampton.*
1868	Croll, Alex., Esq. *Mavis-bank, Grange-road, Upper Norwood.*
1860	*Croskey, J. Rodney, Esq. 31, *St. Mary's-terrace, Paddington, W.*
1877	Crosse, Captain Arthur T. (52nd Regiment). *Plymouth.*
1860	Crosse, Rev. Thomas, D.C.L., M.R.A.S. *Hastings.*
1862	Crossman, James Hiscutt, Esq. *Rolls-park, Chigwell, Essex.*
1875	Crossman, Lieut.-Colonel W., R.E., C.M.G. 30, *Harcourt-terrace, Redcliffe-square, S. W.*
1863	750*Crowder, Thos. Mosley, Esq., M.A. *Corpus Christi College, Oxford.*
1874	Crowe, Francis, Esq., LL.D. 22, *Westbourne-park-road, W.*
1872	Cruikshank, Donald, Esq. *Junior Naval and Military Club, Pall-mall, S.W.*
1859	Cull, Richard, Esq., F.S.A. 12, *Tavistock-street, Bedford-square, W.C.*
1874	Cumming, Chas. Lennox B., Esq. (Madras Civil Service). 34, *Westbourne-park-road, Bayswater, W.*
1857	Cumming, William Fullarton, Esq., M.D. *Athenæum Club, S. W.; and Kinellan, Edinburgh.*
1877	Cunha, J. Gerson da, Esq., M.D. *Royal Asiatic Society, Bombay.*

Year of Election		
1860		Cunliffe, Roger, Esq. 10, *Queen's-gate, S. W.*
1853		Cunningham, John Wm., Esq., Sec. King's College. *Somerset-house, W.C.; and Harrow.*
1862		*Cunynghame, Gen. Sir A. T., K.C.B. *United Service Club, Pall-mall, S. W.*
1865	760	Cure, Capel, Esq. 51, *Grosvenor-street, W.*
1872		Curling, Rev. J. Jas. *Bay of Islands, Newfoundland.*
1868		Currie, A. A. Hay, Esq., C.E. H.M.'s Vice-Consul, *Nice.*
1877		Currie, Donald, Esq., C.M.G. 13, *Hyde-park-place, W.*
1877		Currie, Raikes, Esq. *Minley, Hampshire.*
1843		*Cursetjee, Manockjee, Esq., F.R.S.N.A. *Villa-Byculla, Bombay.*
1839		*Curtis, Timothy, Esq.
1872		Cust, Robt. Needham, Esq. 64, *St. George's-square, S. W.*
1867		Cuttance, John Fras. J., Esq. *Cleveland-house, Greville-road, Kilburn, N. W.*
1872		Czarnikow, Cæsar, Esq. 29, *Mincing-lane, E.C.*

Year of Election		
1874	770	Dadson, Arthur Jas., Esq. 12, *Magdala-villas, Manor-road, New Cross, S.E.*
1863		*Dalgety, Fred. G., Esq. 16, *Hyde-park-terrace, W.*
1866		*Dalhousie, Right Hon. Earl of. 50, *Lancaster-gate, W.*
1870		Dallas, Sir Geo. E., Bart. *Foreign-office, Downing-street, S. W.*
1865		D'Almeida, W. B., Esq. 19, *Green-park, Bath.*
1857		Dalton, D. Foster Grant, Esq. *Shanks-house, near Wincanton, Somerset.*
1873		Daly, Chief Justice Chas. P., LL.D. (President of the American Geographical Society, New York). 84, *Clinton-place, New York.*
1859		Dalyell, Sir Robt. Alex. Osborn, Bart. *The Binns, Linlithgow, N. B.*
1866		Damer, Lieut.-Col. Lionel S. Dawson. *Came-house, Dorchester.*
1871		*Daniell, Colonel E. Staines. *Hamilton-house, Odiham, Hampshire; and East India United Service Club,* 14, *St. James's-square, S. W.*
1877	780	Darbishire, Godfrey, Esq. *Victoria-park, Manchester.*
1874		Darroch, Geo. Edw., Esq. 40, *Stanhope-gardens, S. W.; and Oxford and Cambridge Club, Pall-mall, S. W.*
1838		*Darwin, Charles, Esq., M.A., F.R.S. *Down, Beckenham, Kent.*
1877		Davenport, Samuel, Esq. *Care of H. D. Davenport, Esq.,* 48, *St. James's-street, S. W.; and Beaumont, near Adelaide, S. A.*
1874		Davidson, Duncan, Esq. 4, *Lancaster-gate, W.*
1874		Davidson, Col. James. *Sneinton Manor-house, Nottingham; and Carlton Club, S. W.*
1863		Davies, Sir R. H., K.C.S.I., Chief Commissioner of Oudh, Lucknow. *Care of Messrs. Twining,* 215, *Strand, W.C.*
1873		Davies, Rev. R. V. Faithfull. *Trinity College, Eastbourne.*
1869		*Davies, Robert E., Esq., J.P. *Cosham-house, East Cosham, Hants.*

Year of Election.		
1873		Davies, W. Hy. Esq. 51, *Tregunter-road, South Kensington, S. W.*
1866	790	Davis, Edmund F., Esq. 6, *Cork-street, Bond-street, W.*
1866		Davis, Frederick E., Esq. 20, *Blandford-square, N. W.*
1875		Davis, Commr. Hugh, R.N. *Army and Navy Club, Pall-mall.*
1877		Davis, Israel, Esq., M.A. 6, *King's-Bench-walk, Temple, E.C.*
1874		Davis, Rev. James. 7, *Adam-street, Adelphi, W.C.*
1846		Davis, Sir John Francis, Bart., K.C.B., F.R.S., F.R.S.N.A. *Athenæum Club, S. W.; and Hollywood, near Bristol.*
1874		Dawes, Edwyn, Esq. *Heathfield-lodge, Surbiton.*
1875		*Dawnay, Honble. Guy C. 8, *Belgrave-square, S. W.; and Bookham-grove, Leatherhead.*
1840		*Dawnay, The Hon. Payan. *Beningborough-hall, Newton-upon-Ouse, Yorkshire.*
1877		Day, Frederick, Esq. *South Molton, North Devon.*
1875	800	Daymond, Rev. Charles, M.A., Principal of St. Peter's College, *Peterborough.*
1865		Debary, Rev. Thomas, M.A. 8, *Chapel-place, Henrietta-st., Cavendish-square, W.*
1866		Debenham, William, Esq. 41, *Grove-end-road, St. John's-wood, N. W.*
1875		De Blaquière, Capt. Lord, R.N. *Scientific Club,* 7, *Savile-row, W.; and Springfield, Crawley, Sussex.*
1876		De Crespigny, Aug. C., Esq. *London and County Club, Langham-place, W.*
1856		De Crespigny, Lieutenant C., R.N. *Care of Messrs. King and Co.,* 65, *Cornhill, E.C.*
1876		*Dekeyser, P., Esq. *Chatham-house, Grove-road, Clapham-park.*
1865		*De Laski, A., Esq. 2, *Adelaide-crescent, Brighton.*
1869		De Leon, Dr. Hananel. 26, *Redcliffe-gardens, West Brompton, S. W.*
1862		Denham, Vice-Adm. Sir Henry Mangles, F.R.S. 21, *Carlton-road, Maida-vale, W.*
1860	810	Denison, Alfred, Esq. 6, *Albemarle-street, W.*
1876		Denman, Hon. Geo. 11, *Palace-gate, Kensington, W.*
1875		*Denny, Edward Maynard, Esq. 55, *Manchester-street, W.*
1876		Denny, Thos. Anthony, Esq. 7, *Connaught-place, W.; and Budingwood, Horsham.*
1875		Dennys, N. B., Esq., PH.D. *Hong Kong.*
1872		*Dent, Alfred, Esq. 29, *Chesham-street, S. W.*
1874		Dent, Clinton T., Esq. 29, *Chesham-street, S. W.*
1872		*Dent, Edward, Esq. *Fernacres, Falmer, near Slough, Bucks.*
1871		Dentry, James, Esq. *The College, Margate.*
1853		*Derby, Right Hon. Edward Henry, Earl of, P.C., LL.D., D.C.L. 23, *St. James's-square, S. W.; and Knowsley-park, Prescot, Lancashire.*
1877	820	Derry, Frederick, Esq. 31, *Upper Hockley-street, Birmingham.*
1875		De Ricci, Jas. H., Esq. 2, *Tanfield-chambers, Temple.*
1867		De Salis, Lieut.-Gen. Rodolph, C.B. 123, *Pall-mall, S. W.*
1875		De Salis, Wm. Fane, Esq. *Dawley-court, Uxbridge.*
1872		Desmond, Rev. H. M. Egan. 31, *Belsize-park, N. W.; and London and Westminster Bank,* 1, *St. James's-square.*

Year of Election		
1874		Devas, Thomas, Esq. *Mount Ararat, Wimbledon.*
1874		Devereux, W. Cope, Esq., R.N. 4, *East India-chambers, Leadenhall-street, E.C.*
187		De Vitre, Rev. George, M.A. *Keep Hatch, Wokingham, Berks.*
1837		*Devonshire, His Grace the Duke of, K.G., LL.D., D.C.L., F.R.S. *Devonshire-house, Piccadilly, W.; and Hardwicke-hall, Derbyshire.*
1855		De Wesselow, Lieut. Fras. G. Simpkinson. 67, *Victoria-street, S.W.*
1877	830	Dewdney, George, Esq., B.A. *Belle-vue, Chepstow.*
1872		Dhuleep-Singh, His Highness the Maharaja. *Elvedon-hall, near Thetford.*
1870		Dibdin, Charles, Esq. 62, *Torrington-square, W.C.*
1870		Dibdin, Robert W., Esq. 62, *Torrington-square, W.C.*
1862		Dick, Captain Charles Cramond. *Bayford-grange, Hertford.*
1866		*Dick, Fitzwilliam, Esq., M.P. 20, *Curzon-street, Mayfair, W.*
1861		Dick, Robert Kerr, Esq. (Bengal Civil Service). *Oriental Club, W.*
1830		*Dickinson, Francis Henry, Esq., F.S.A. 119, *St. George's-square, Pimlico, S.W.; and Kingweston-park, Somerset.*
1854		*Dickinson, Sebastian Stewart, Esq., M.P. 12, *Suffolk-street, Pall-mall; and Brown's-hill, Stroud, Gloucestershire.*
1877		Dickinson, Thomas B., Esq. 19, *Chesham-road, Brighton.*
1859	840	Dickson, A. Benson, Esq. 4, *New-square, Lincoln's-inn, W.C.*
1877		Dickson, John, Esq. *Beyrout.*
1875		*Dickson, Oscar, Esq. *Stockholm. Care of his Excellency Baron Hochschild.*
1860		Dietz, Bernard, Esq., of Algoa Bay. 3, *Dorset-square, W.*
1859		Digby, G. Wingfield, Esq. *Sherborne-castle, Dorset.*
1860		Digby, Lieut.-Colonel John Almerous. *Chalmington-house, Cattstock, Dorchester.*
1859		*Dilke, Sir Charles Wentworth, Bart., M.P. 76, *Sloane-street, S.W.*
1856		Dillon, The Hon. Arthur. 113, *Victoria-street, S.W.*
1864		Dimsdale, J. C., Esq. 50, *Cornhill, E.C.; and 52, Cleveland-square, W.*
1873		Dineen, Thomas, Esq. 1, *Leeds-bridge, Leeds, Yorkshire.*
1872	850	Divett, Edwd. Ross, Esq. *Reform Club, S.W.*
1872		Dixon, Joseph, Esq. *Hillsbro'-hall, Sheffield.*
1861		Dixon, Lieut.-Colonel John.
1854		*Dixon, W. Hepworth, Esq., F.S.A. 6, *St. James's-terrace, St. John's-wood, N.W.*
1877		Dobson, George, Esq. 3, *Bourne-terrace, Kingswood, Bristol.*
1873		Dodd, Jno., Esq. *Tamsui, Formosa. Care of Jno. Ewart, Esq., 7, Lancaster-street, Hyde-park, W.*
1876		*Dodson, Geo. Edward, Esq. *Ravensknowle, Anerley, S.E.*
1854		Dodson, Right Hon. John George, M.P. 6, *Seamore-place, Mayfair, W.*
1876		Doran, Colonel John, C.B. *Percy-house, Leyland-road, Lee.*
1870		Dorchester, Dudley Wm. Carleton, Lord. 42, *Berkeley-square, W.*
1876	860	Dore, Henry J., Esq. 38, *Bruton-street, W.*
1873		Doria, Marchese Giacomo. *Genoa. Care of Messrs. Kirkland, Cope, and Co., 23, Salisbury-street, Strand, W.C.*

Year of Election.		
1868		Douglas, John, Esq. *Angus-lodge, Portsea.*
1868		Douglas, Captain Neil D. Cecil F. 1, *Morpeth-terrace, Victoria-street, S.W.; and Guards' Club, S.W.*
1875		Douglas, Lieut.-General Sir Percy Bart. *Henlade-house, Taunton, Somerset.*
1871		Douglas, Stewart, Esq. 49, *Elizabeth-street, Eaton-square, S.W.*
1875		*Douglas, W. D. R., Esq. *Orchardton, Castle Douglas, N.B.*
1874		Dowling, Edward Samuel, Esq. 14, *Holland-villas-road, Kensington, W.*
1871		Down, J. H. Langdon, Esq., M.D. 39, *Welbeck-street, W.; and Normansfield, Hampton Wick.*
1878		Downer, Richard Clarke, Esq. *Falcon-house, Gough-square, E.C.*
1853	870	Doyle, Sir Francis Hastings C., Bart. *Custom-house, E.C.*
1845		*Drach, Solomon Moses, Esq., F.R.A.S. 23, *Upper Barnsbury-street, N.*
1872		*Drew, Frederic, Esq. *Eton College, Windsor.*
1869		*Drummond, Captain Alfred Manners. *Army and Navy Club, S.W.*
1865		Drummond, E. A., Esq. *Cadlands, near Southampton.*
1846		Drury, Rear-Admiral Byron. 4, *Cambridge-villas, Cheltenham.*
1877		Dryland, William, Esq. 38, *Brook-street, Grosvenor-square, W.*
1851		*Du Cane, Major Francis, R.E. *Brentwood, Essex.*
1851		*Ducie, Right Hon. Henry John, Earl of, F.R.S. 16, *Portman-square, W.*
1875		Duckham, Joseph Hy., Esq., R.N., Dockmaster, *West India Docks, Limehouse Entrance, E.*
1859	880	Duckworth, Henry, Esq. *Holme-house, Columbia-road, Oxton, Birkenhead*
1875		Du Faur, Eccleston, Esq. *Sydney, New South Wales. Care of Miss Du Faur,* 74, *Lansdowne-road, Kensington-park, W.*
1860		*Duff, Mountstuart Elphinstone Grant, Esq., M.P. *York-house, Twickenham.*
1868		Duff, Wm. Pirie, Esq. *Calcutta. Care of Messrs. John Watson and Co.*, 34, *Fenchurch-street, E.C.*
1857		*Dufferin, Right Hon. Fredk. Temple Hamilton-Blackwood, Earl of, K.P., G.C.M.G., K.C.B., F.R.S. *Clandeboye, near Belfast, Ireland.*
1866		*Dugdale, Captain Henry Charles G. *Merevale-hall, Atherstone, Warwick.*
1867		*Dugdale, John, Esq. 1, *Hyde-park-gardens; and Llwyn, Llanfyllin, Oswestry.*
1868		Dunbar, John Samuel A., Esq. 28, *Pembridge-crescent, Bayswater, W.; and* 4, *Barnard's-inn, Holborn.*
1863		Duncan, Major Francis, R.A., M.A., D.C.L., LL.D. *Scientific Club*, 7, *Savile-row, W.*
1861		*Duncan, George, Esq. 45, *Gordon-square, W.C.*
1875	890	Duncan, John, Esq. *Care of Messrs. Anderson and Co.*, 17, *Philpot-lane, E.*
1878		Duncan, William Alexander, Esq. *Herbert-terrace, Fallowfield, near Manchester.*
1867		Duncan, W. H. G., Esq. *Scientific Club*, 7, *Savile-row, W.*
1873		Dunlop, Alexander Milne, Esq. 28, *Clanricarde-gardens, W.; and* 3, *Old Palace-yard, Westminster, S.W.*
1875		Dunlop, Hamilton Grant, Esq. 11, *Rockstone-place, Southampton; and Junior Carlton Club, S.W.*

Year of Election.		
1859		*Dunlop, R. H. Wallace, Esq., C.B. (Indian Civil Service). 12, *Kent-gardens, Castle-hill, Ealing.*
1860		*Dunmore, Right Hon. Charles Adolphus Murray, Earl of. 50, *Portland-place, W.*
1868		Dunn, Captain F. J. A. *Portillon, Tours, France.*
1875		Dunn, John M., Esq. 30, *Claverton-street, St. George's-square, S.W.*
1874		Dunn, Wm., Esq. 95, *Bishopsgate-street-within, E.C.*
1867	900	Dunraven, Right Hon. Wyndham Thos., Earl of. *Coombe-wood, Kingston-on-Thames.*
1875		Dunstone, J. John, Esq.
1856		Duprat, Le Vicomte. *Consul-Général de Portugal,* 10, *St. Mary-Axe, E.C.*
1869		Durham, Edward, Esq. *City-house, Little Chester, near Derby.*
1874		Durnford, Lieut.-Colonel A. W., R.E.
1874		Duthie, Capt. W. H., R.A. *Devonport.*
1868		*Dutton, Frederick H., Esq. 11, *Cromwell-crescent, South Kensington, S.W.*
1877		Dyason, John Sanford, Esq. 12, *Boscobel-gardens, N.W.*
1874		Dykes, William Alston, Esq. (Provost of Hamilton). *The Orchard, Hamilton, N. B.*
1870		Dymes, Daniel David, Esq. *Windham Club, S.W.; and* 9, *Mincing-lane, E.C.*
1856	910	Eardley-Wilmot, Major-Gen. F., R.A. 78, *West Cromwell-road, S.W.*
1871		Earle, Arthur, Esq. *Childwall-lodge, Wavertree, near Liverpool; and Windham Club, S.W.*
1877		Easton, Edward, Esq., C.E. 7, *Delahay-street, Westminster, S.W.*
1869		Eastwick, Edward B., Esq., F.R.S. 88, *Holland-road, Kensington, W.*
1857		Eastwick, Captain W. J. 12, *Leinster-gardens, Hyde-park, W.*
1876		Eaton, Commr. Alfred, R.N. *Brook-house, Melling, near Liverpool.*
1863		Eaton, F. A., Esq. *New University Club, St. James's-street, S.W.*
1862		*Eaton, H. E., Esq. 38, *Rutland-gate, Hyde-park, S.W.*
1862		*Eaton, Henry William, Esq., M.P. 16, *Prince's-gate, Hyde-park, S.W.*
1864		*Eaton, William Meriton, Esq. 16, *Prince's-gate, Hyde-park, S.W.*
1866	920	Eatwell, Surgeon-Major W. C. B., M.D. *Oriental Club, Hanover-square, W.*
1876		Ebden, Alfred, Esq.
1875		*Ebden, Charles J., Esq., B.A. *Coghurst-hall, Hastings.*
1861		Eber, General F.
1862		Ebury, Right Hon. Lord. 107, *Park-street, Grosvenor-square, W.; and Moor-park, Herts.*
1858		Edge, Rev. W. J., M.A. *Combe-Martin-house, Upper Tooting, S.W.*
1863		Edgeworth, M. P., Esq. (Bengal Civil Service). *Mastrim-house, Anerley, S.E.*
1874		Edmonds, John Thos., Esq. *Curnavon-house, Varteg, near Pontypool, Monmouthshire.*

Year of Election.		
1866		*Edwardes, Thomas Dyer, Esq. 5, *Hyde-park-gate, Kensington, W.*
1871		*Edwardes, Thomas Dyer, Esq., jun. 5, *Hyde-park-gate, Kensington, W.*
1868	930	Edwards, Rev. A. T., M.A. 39, *Upper Kennington-lane, S.E.*
1865		Edwards, G. T., Esq., M.A. 1, *Dr. Johnson's-buildings, Temple, E.C.*
1861		*Edwards, Henry, Esq., M.P. 53, *Berkeley-square, W.*
1871		Edwards, James Lyon, Esq. *Holmwood, Kingston-hill, Surrey.*
1860		Edwards, Colonel J. B., R.E., C.B. *United Service Club, S.W.; and Shorncliffe Camp, Kent.*
1853		Egerton, Rear-Admiral the Hon. Francis, M.P. *Devonshire-house, W.*
1868		Elder, A. L., Esq. *Campden-house, Kensington, W.*
1863		*Elder, George, Esq. *Knock-castle, Ayrshire.*
1867		Eley, Charles John, Esq. 5, *Pelham-place, Kensington, S.W.*
1865		Elias, Ney, jun., Esq. 33, *Inverness-terrace, Bayswater, W.*
1870	940	Ellenborough, Colonel Lord. *Holly Spring, Bracknell, Berks; and* 39, *Chapel-street, Belgrave-square, S.W.*
1876		Elles, Jamieson, Esq. *Wimbledon-common, S.W.*
1876		Elles, Major Wm. K., 38th Regt. *Army and Navy Club, Pall-mall, S.W.*
1875		*Elliot, Colonel Chas., C.B. 28, *Stafford-terrace, Kensington, W.*
1860		Elliot, G., Esq., C.E. *The Hall, Houghton-le-Spring, near Fence Houses, Durham.*
1857		*Elliot, Capt. L. R. *La Mailleraye-sur-Seine, Seine Inférieure. Care of J. L. Elliot, Esq., C* 4, *Albany, W.*
1871		Elliot, William, Esq. 3, *The Limes, Lambert-road, Brixton-rise, S.W.*
1878		Elliot, Lieut. The Hon. William Fitzwilliam. 48, *Eaton-square, S.W.; and Minto-house, Hawick, N.B.*
1875		Ellis, Sir Barrow H., K.C.S.I. (Mem. Council of India). 69, *Cromwell-road, S.W.; and India-office, S.W.*
1873		Ellis, Hon. Evelyn H. *Raleigh Club, Regent-street, S.W.*
1865	950	Ellis, W. E. H., Esq. *Hasfield-rectory, Gloucester; Oriental Club, W.; and Byculla Club, Bombay.*
1871		Ellis, Walter L. J., Esq. 7, *Brunswick-place, Regent's-park, N.W.*
1874		Elmslie, Jas. A., Esq.
1873		Elmslie, William, Esq. *The Laurels, Richmond-hill.*
1858		Elphinstone, Major Sir Howard C., V.C., R.E., K.C.B., C.M.G. *Buckingham-palace, S.W.*
1875		Elsey, Jno. Green, Esq. *Morant-house, Addison-road, Kensington, W.*
1869		Elsey, Colonel William. *West-lodge, Ealing, W.*
1857		Elton, Sir A. H., Bart. *Athenæum Club, S.W.; and Clevedon-court, Somersetshire.*
1873		Elton, Capt. Frederick. *Care of Messrs. H. S. King and Co.,* 45, *Pall-mall, S.W.*
1872		Elwell, W. R. G., Esq. *Bathurst-lodge, Spring-grove, Isleworth.*
1868	960	Ely, John Henry Wellington Graham Loftus, Marquis of. 9, *Prince's-gate, S.W.; and Ely-castle, Fermanagh.*
1877		Emery, John, Esq. 15, *Dugnall-park-villas, South Norwood.*

Year of Election.		
1860		Enfield, Edward, Esq., F.S.A. 19, *Chester-terrace, Regent's-park, N.W.*
1877		England, Capt. W. G., R.N. 18, *Eaton-rise, Ealing, W.; and United Service Club, Pall-mall, S.W.*
1863		Engleheart, Gardner D., Esq. *Duchy of Lancaster Office, Lancaster-place, W.C.*
1876		Errington, Geo., Esq., M.P. 16, *Albany, W.*
1876		*Erskine, Hon. Chas. H. S. *Alloa-park, Alloa, N.B.*
1870		Erskine, Claude J., Esq. (Bombay Civil Service). 87, *Harley-street, W.; and Athenæum Club, S.W.*
1852		Erskine, Admiral John Elphinstone. 1 *L, Albany, W.; and Lochend Stirling, N. B.*
1877		Escott, T. H. S., Esq. 1, *South-street, Thurloe-square, S.W.*
1857	970	*Esmeade, G. M. M., Esq. 29, *Park-street, Grosvenor-square, W.*
1874		*Evans, B. Hill, Esq. 75, *Chancery-lane, E.C.*
1870		*Evans, Edward Bickerton, Esq. *Whitbourne-hall, near Worcester.*
1877		Evans, Edward Prichard, Esq. 21, *Primrose-hill-road, Regent's-park, N.W.*
1876		Evans, Colonel E. L. M. *East India United Service Club*, 14, *St. James's-square, S.W.*
1857		Evans, Captain F. J. O., R.N., C.B., F.R.S., F.R.A.S. *Hydrographic-office, Admiralty, S.W.*
1830		*Evans, Vice-Admiral George. 1, *New-street, Spring-gardens, S.W.; and Bulkeley-house, Englefield-green, Staines.*
1870		Evans, Lieut.-Colonel Henry Lloyd. 14, *St. James's-square, S.W.*
1857		Evans, Thos. Wm., Esq., M.P. *Allestree-hall, Derby.*
1830		*Evans, W., Esq.
1865	980	Evans, Colonel William Edwyn. 55, *Seymour-street, Portman-square, W.*
1867		Evans, W. Herbert, Esq. *Forde Abbey, Chard, Dorset.*
1861		Evelyn, Lieut.-Colonel George P.
1851		*Evelyn, William J., Esq., F.S.A. *Wotton-house, Wotton, near Dorking.*
1830		*Everett, James, Esq., F.S.A.
1865		Everitt, George A., Esq. *Knowle-hall, Warwickshire.*
1874		Evill, William, Esq. *Lyncombe-house, St. John's-hill, Wandsworth.*
1873		Ewart, John, Esq. 7, *Lancaster-street, Hyde-park, W.*
1856		Ewing, J. D. Crum, Esq. 3, *Lime-street-square, E.C.*
1857		Eyre, Edward J., Esq. *The Grange, Steeple Aston, Oxford.*
1861	990	Eyre, George E., Esq. 59, *Lowndes-square, Brompton, S.W.*
1856		Eyre, Major-Gen. Sir Vincent, K.C.S.I. *Athenæum Club, S.W.*

1873		Fair, John, Esq. 50, *Hamilton-terrace, St. John's-wood, N.W.*
1870		Fairbridge, Charles, Esq. *Care of Rev. J. R. Izat, Balscott, near Banbury.*
1869		Fairfax, Captain Henry, R.N. *Army and Navy Club, S.W.*
1856		Fairholme, George Knight, Esq. *Care of Mr. Ridgway*, 169, *Piccadilly, W.*

Year of Election.		
1870		Fairland, Edwin, Esq., M.D. (Surg. 21st Hussars). *Lucknow, Oude.*
1838		Falconer, Thomas, Esq. *Usk, Monmouthshire.*
1857		Falkland, Right Hon. Lucius Bentinck, Viscount. *Skutterskelfe, Yorkshire.*
1871		Fane, Edward, Esq. 14, *St. James's-square, S.W.*
1855	1000	*Fanshawe, Admiral E. G., C.B. *Royal Naval College, Greenwich.*
1874		Farmer, Edmund, Esq. 10, *Southwick-place, Hyde-park-square, W.*
1873		Farmer, James, Esq. 6, *Porchester-gate, Kensington-gardens, W.*
1874		Farquhar, Walter, Esq. *Care of Messrs. Forbes, Forbes and Co., 9, King William-street, E.C.*
1868		*Farquharson, Major.-Gen. G. McB. *United Service Club, Pall-mall, S.W.*
1875		Farrer, Hy. Richd., Esq. 46, *Eaton-pl., S.W.; and Green Hammerton-hall, York.*
1863		*Farrer, W. Jas., Esq. 18, *Upper Brook-street, W.*
1876		Farzana, Mirza Rahim. (*Teheran.*) *Care of Messrs. Grindlay and Co., 55, Parliament-street, S.W.*
1874		*Faulconer, Rob. Stephen, Esq. *Fairlawn, Clarence-road, Clapham-park, S.W.*
1877		Faulkner, Joseph, Esq. 101, *Asylum-road, S.E.*
1863	1010	*Faunthorpe, Rev. J. P., M.A. *Whitelands Training-college, Chelsea.*
1869		Fawcett, Captain Edward Boyd, M.A. 3, *Barnpark-terrace, Teignmouth, Devon.*
1874		Fawssett, Frederick, Esq., M.D. *Westgate, Louth, Lincolnshire.*
1853		*Fayrer, Surgeon-General Sir Joseph, K.C.S.I., M.D. 16, *Granville-place, Portman-square, W.*
1875		Feilden, Capt. Hy. Wemyss, R.A. 2, *Grosvenor-terrace, Aldershot.*
1876		*Feilden, Lieut.-Colonel O. B. (78th Highlanders). *Shaw-hill, Chorley, Lancashire.*
1866		Felkin, William, Esq., jun., F.Z.S. *Care of Mrs. H. Dawson, 8, Stratford-square, Nottingham.*
1874		Fenn, Thomas, Esq. 14, *Bedford-square, W.C.*
1872		Fenner, William A., Esq. *Thatched-House Club, St. James's-street, S.W.; and Woodlands, Kenn, near Exeter.*
1875		Ferguson, Jno., Esq. 10, *Staple Inn, W.C.*
1840	1020	*Fergusson, James, Esq., F.R.S., D.C.L. 20, *Langham-place, W.*
187		Fergusson, Right Hon. Sir James, Bart. *Kilkerran, Maybole, N.B.*
1876		Ferris, Colonel W. Spiller. 1, *St. Michael's-gardens, Notting-hill, S.W.*
1871		Festing, Major Robert, R.E. *South Kensington Museum, S.W.*
1876		Few, Robert Hamilton, Esq. *Southery-grange, Lingfield-road, Wimbledon.*
1878		Fielding, Charles, Esq. 9, *Cullum-street, E.C.; and Verulam Club.*
1874		Fielden, Joshua, Esq., M.P. *Nutfield-priory, Redhill, Surrey.*
1875		*Figgis, Samuel, Esq. *The Lawn, 105, Tulse-hill, S.W.*
1877		Finch, Jonadab, Esq. *Alma-house, Willesden.*
1877		Findlay, John, Esq. 10, *Belmont-crescent, Glasgow.*
1877	1030	Finn, Alexander, Esq. *Teheran.*
1874		Firth, Fras. Helme, Esq. 25, *Cockspur-street, S.W.*
1870		*Firth, John, Esq., J.P. *Care of Messrs. R. Buckland and Son, Hop-gardens, St. Martin's-lane, W.C.*
1869		Fitch, Frederick, Esq., F.R.M.S. *Hadleigh-house, Highbury-new-park, N.*

Year of Election	
1876	*Fitz-Adam, John T., Esq 5, *Phillimore-gardens, Kensington, W.*
1857	*Fitzclarence, Commander the Hon. George, R.N. 1, *Warwick-square, S.W.*
1872	Fitzgerald, A., Esq. *Verulam Club*, 54, *St. James's-street, S.W.*
1847	Fitzgerald, G. V. S., Esq. *India-office, S.W.*
1861	Fitzgerald, Captain Keane. 2, *Portland-place, W.*
1873	Fitz-Gerald, R. U. Penrose, Esq. 110, *Eaton-square, S.W.*
1873	1040 Fitz-James, Frank, Esq., C.E. *Benares. Care of W. Whiteley, Esq., Welbourne-grove, Bayswater.*
1874	*Fitz Roy, Capt. Rob. O'Brien, R.N. *United Service Club, Pall-mall.*
1857	Fitzwilliam, The Hon. C. W., M.P. *Brooks's Club, St. James's-street, S.W.*
1865	*Fitzwilliam, William S., Esq. 12, *Gunter's-grove, West Brompton, S.W.*
1837	*Fitzwilliam, William Thomas, Earl. 4, *Grosvenor-square, W.; and Wentworth-house, Rotherham, Yorkshire.*
1863	Fleming, G., Esq. 30, *Cambridge-road, Kilburn, N.W.*
1861	*Fleming, John, Esq., C.S.I. *Homewood, Chiselhurst.*
1878	Fleming, Sandford, Esq., C.M.G., F.G.S. *Ottawa, Canada; and* 16, *Durham-villas, Kensington, W.*
1865	Fleming, Rev. T. S. *The Vicarage, St. Clement's, Leeds.*
1853	*Flemyng, Rev. Francis P. *Sgor Bheann, near Dunoon, Argyleshire.*
1857	1050 Fletcher, Thomas Keddey, Esq. *Union-dock, Limehouse, E.*
1878	Fletcher, W. Henry, Esq. *Park-lodge, Blackheath-park, S.E.*
1876	*Floersheim, Louis, Esq. 11, *Hyde-park-street, W.*
1877	Florence, Ernest Badinius, Esq. 6, *Prince of Wales-terrace, Kensington; and* 5, *Pump-court, Temple, E.C.*
1876	Floyer, Ernest A., Esq. 7, *The Terrace, Putney, S.W.*
1877	Foggo, Geo., Esq. *Oriental Club, W.*
1873	Fogo, J. M. S., Esq. (Surg.-General). *Army and Navy Club, Pall-mall, S.W.*
1864	Foley, Lieut.-Gen. the Hon. St. George, C.B. 24, *Bolton-street, W.*
1876	*Foljambe, Cecil G. S., Esq. *Cockglode, Ollerton, Newark.*
1874	Folkard, A., Esq. *Thatched-House Club, St. James's-street, S.W.*
1861	1060 Foord, John Bromley, Esq. *May-villa, Bexley-heath.*
1874	*Foot, Capt. C.E., R.N. *Care of Messrs. Hildreth and Ommanney*, 41, *Norfolk-street, Strand, W.C.; and United Service Club, Pall-mall.*
1874	Forbes, A. Litton A., Esq. *Buckingham Club*, 1, *Regent-street, S.W.*
1863	Forbes, Capt. C. J. F. Smith. *Care of Messrs. H. S. King and Co.*, 45, *Pall-mall, S.W.*
1867	Forbes, Geo. Edward, Esq. *Colinton, Ipswich, Queensland; Union Club, S.W.;* 11, *Melville-street, Edinburgh; and New Club, Edinburgh.*
1873	Forbes, General Jno., C.B. *Inverernan, Strathdon, Aberdeenshire; and Messrs. Forbes and Co.*, 12, *Leadenhall-street, E.C.*
1874	Forbes, Major Jno. G., R.E. *Care of Messrs. Grindlay and Co.*, 55, *Parliament-street, S.W.; and* 14, *St. James's-square, S.W.*
1876	Forbes, J. S., Esq. *London, Chatham, and Dover Railway Office, Victoria-station, S.W.*

Year of Election.		
1860		Forbes, Lord, M.A. *Castle Forbes, Aberdeenshire.*
1873		Forbes, W. F., Esq. *Loch-cote-house, Bathgate, N.B.; and Castleton.*
1869	1070	Ford, Major-General Barnett (late Governor of the Andaman Islands). 31, *Queensborough-terrace, Hyde-park, W.*
1875		*Ford, Francis Clare, Esq., C.B., C.M.G.
1874		Forde, Henry Charles, Esq., C.E. *St. Brendan's, Wimbledon, S.W.*
1874		*Forlong, Major-General J. G. R. (Madras Staff Corps). *Chartered Mercantile Bank*, 65, *Old Broad-street, E.C.*
1872		*Forrest, Alex, Esq., Survey Department of Perth. *Western Australia.*
1876		Forrest, James, Esq. *Kirriemuir, N. B.*
1872		*Forrest, Jno., Esq. *Perth, Western Australia.*
1874		Forssman, Comr. O. A. (Consul for Portugal). *Potschefstroom, Transvaal Republic, S. Africa. Care of Vicomte Duprat*, 10, *St. Mary Axe, E.C.*
1868		Forster, Hon. Anthony. 5, *Anglesea-terrace, St. Leonards-on-Sea.*
1876		*Forster, John, Esq. *Oriental Club, Hanover-square, W.*
1839	1080	*Forster, Right Hon. William Edward, M.P. 80, *Eccleston-square, S.W.; and Burley, near Otley.*
1867		Forsyth, Sir T. Douglas, K.C.S.I., C.B. 76, *Onslow-gardens, S. Kensington, S.W.*
1861		Forsyth, William, Esq., M.P., Q.C. 61, *Rultand-gate, S. W.*
1861		*Fortescue, Hon. Dudley F. 9, *Hertford-street, Mayfair, W.*
1873		Foss, Edward William, Esq. *Frensham-house, Croydon.*
1873		Foss, G. Lush, Esq. *Clevedon-house, Coronation-road, Bristol.*
1866		Foster, Edmond, Esq., jun. *Lexham-road, Cromwell-road, W.*
1871		Foster, James Murray, Esq., L.M.D., F.R.C.P., F.S.A., &c. *Nazeerah, Assam, Bengal. Care of Joseph Foster, Esq., Collumpton, Devon.*
1878		Foster, Norris T., Esq. *Aston-park, near Birmingham.*
1876		Foster, R. G., Esq. 4, *St. James's-place, Gloucester.*
1873	1090	Fowler, A. Grant, Esq. *Care of Alex. Denoon, Esq., Beckenham, Kent.*
1863		*Fowler, J. T., Esq. 13, *Burlington-road, Westbourne-park, W.*
1872		*Fowler, John, Esq., C.E. *Thornwood-lodge, Campden-hill, W.*
1850		*Fowler, Robert N., Esq. M.A. 50, *Cornhill, E.C.; and Tottenham.*
1859		Fox, Maj.-Gen. A. Lane. *Guildford, Surrey.*
1866		Fox, D. M., Esq., Chief Eng. Santos and St. Paulo Railway. *St. Paulo, Brazil. Care of G. H. Hillier, Esq.*, 111, *Gresham-house, Old Broad-street, E.C.*
1864		*Fox, Francis E., Esq., B.A. *The Mount, Mannamead, Plymouth.*
1876		Fox, Francis Wm., Esq. *Grove-house, Stoke Bishop, near Bristol.*
1876		Fox, Lieut. T. A., R.N.R. *Care of Messrs. H. S. King and Co.*, 65, *Cornhill, E.C.*
1865		*Franks, Aug. W., Esq. 103, *Victoria-street, S.W.*
1860	1100	Franks, Charles W., Esq.
1862		Fraser, Captain H. A., I.N. *Zanzibar.*
1874		Fraser, Jas. Grant, Esq., C.E. 9, *Great Queen-street, Westminster, S.W.*
1866		Fraser, Captain T. *Care of Col. Macdonald, Senior United Service Club, S.W.*
1868		Frater, Alex., Esq. H.M.'s Consul, *Tamsuy, Formosa. Care of James Frater, Esq., Town-house, Aberdeen.*

Year of Election.	
1873	Freeland, H. W., Esq. *Chichester; and Athenæum Club, Pall-mall.*
1868	Freeman, Henry W., Esq. *Thirlestaine-hall, Cheltenham.*
1869	Freke, Thomas George, Esq. 1, *Cromwell-houses, Kensington, S W.*
1863	Fremantle, Captain Hon. Edmund Robert, R.N., C.B., C.M.G. 20, *Eaton-place, S. W.*
1864	Freme, Colonel James H. *Wrentnall-house, Shropshire; and Army and Navy Club, S. W.*
1877	1110 Frere, Lieut. Bartle C. A. *Care of Messrs. Cox and Co., Craig's-court, S. W.*
1850	Frere, Bartle John Laurie, Esq. 45, *Bedford-square, W.C.*
1839	*Frere, George, Esq. 16, *Great College-street, S. W.*
1867	Frere, Right Hon. Sir Hy. Bartle Edw., Bart., P.C., G.C.B., G.C.S.I., D.C.L. *Cape Town.*
1842	Frere, William Edw., Esq., F.R.A.S. *The Rectory, Bitton, Gloucestershire.*
1869	*Freshfield, Douglas W., Esq. 6, *Stanhope-gardens, South Kensington, S. W.; and United University Club, S. W.*
1873	*Freshfield, W. Dawes, Esq. 64, *Westbourne-terrace, W.*
1877	Frewen, Richard, Esq. *Wanderers' Club, Pall-mall, S. W.*
1872	Friedrichsen, Aug. Daniel, Esq. 3, *Queen's-gate-terrace, S. W.*
1874	Frith, Rev. William. 3, *Brunswick-villas, Cambridge-road, Turnham-green.*
1876	1120 *Fry, Frederick Morris, Esq. 14, *Montague-street, Russell-square, W.C.*
1876	Fry, Rev. Henry John. *Selby, Yorkshire.*
1863	Fudge, William, Esq. 5, *Park-row, Bristol.*
1865	Fuller, Thomas, Esq. *Brazilian Submarine Telegraph Co.*, 8, *Great Winchester-street, E.C.; and United University Club, S. W.*
1860	Fussell, Rev. J. G. Curry. 51, *Victoria-street, S. W.; and Kiloskehane-castle, Templemore, Ireland.*
1868	Fyfe, Andrew, Esq., M.D. 112, *Brompton-road, S. W.*
1866	Fytche, Lieut.-General Albert, C.S.I. *Pyrgo-park, Havering-atte-Bower, near Romford, Essex; and Reform Club, S. W.*

1863	*Gabrielli, Antoine, Esq. 6, *Queen's-gate-terrace, Kensington, S. W.*
1875	Gahan, C. F., Esq. *India-office, S. W.; and Woodslee, Kingston-hill.*
1878	Galbraith, James W., Esq. *Corryville, Cromwell-road, S. W.; and Beach-house, Wemyss-bay, N.B.*
1877	1130 Galbraith, Wm. Robert, Esq., C.E. 91, *Finchley-road, N. W.*
1872	Gale, Henry, Esq., C.E. *Care of Mr. A. S. Twyford*, 5, *Southampton-street, Bloomsbury, W.C.*
1855	*Galloway, John James, Esq.
1869	Galsworthy, Frederick Thomas, Esq. 8, *Queen's-gate, Hyde-park, S. W.*
1873	Galsworthy, Robt. Herbert, Esq. 61, *Gloucester-place, Portman-square, W.*
1848	*Galton, Captain Douglas, R.E. 12, *Chester-street, Grosvenor-place, S. W.*
1850	*Galton, Francis, Esq., M.A., F.R.S. 42, *Rutland-gate, S. W.; and 5, Bertie-terrace, Leamington.*

Year of Election.	
1871	Galton, Theodore Howard, Esq. 78, *Queen's-gate; and Hadzor-house, Droitwich.*
1854	*Gammell, Major Andrew. *Drumtochty, Kincardineshire, N. B.*
1877	Gardiner, Chas., Esq. *The Temple, Goring, Oxford.*
1873	1140*Gardiner, H. J., Esq. 6, *Orsett-terrace, Westbourne-terrace, W.*
1869	Gardner, Christopher T., Esq. H.M.'s Consul, *Kiungchow, China. Care of John Gardner, Esq., Subiaco-lodge, Roehampton-lane.*
1865	Gardner, Rear-Admiral G. H. *Woodside, Eltham.*
1876	Gardner, Henry Dent, Esq. *Sherwood, Eltham-road, S.E.*
1866	Gardner, John Dunn, Esq.
1876	Garvagh, Lord. *Carlton Club, Pall-mall, S.W.*
1863	Gascoigne, Frederic, Esq.
1875	Gaskin, Rev. Joseph. *Chateau Belle Assise, Boulogne-sur-mer. Care of J. H. Gaskin, Esq., Home-office, Whitehall, S. W.*
1859	*Gassiot, John P., jun., Esq. *The Culvers, Carshalton, Surrey.*
1866	Gastrell, Lieut.-Col. James E. (Beng. Staff Corps). *Surveyor-General's Office, Calcutta. Care of H. T. Gastrell, Esq.*, 36, *Lincoln's-inn-fields, W.C.*
1866	1150*Gatty, Charles H., Esq., M.A. *Felbridge-park, East Grinstead, Sussex.*
1873	Gawler, Colonel J. C. *Tower of London, E.C.*
1875	Gayfer, Wm., Esq., M.A., LL.D. *Middle-class-school, Bromley, Kent.*
1873	*Geiger, Jno. Lewis, Esq. 75, *Onslow-gardens, South Kensington, S. W.*
1870	*Gellatly, Edward, Esq. *Uplands, Sydenham.*
1865	George, Rev. H. B. *New College, Oxford.*
1876	*Ghewy, Albert Brown, Esq., C.E. *Thatched-House Club, S. W.*
1866	*Gibb, George Henderson, Esq. 13, *Victoria-street, Westminster, S. W.*
1859	*Gibbs, H. Hucks, Esq. *St. Dunstan's, Regent's-park, N. W.*
1873	Gibbs, James, Esq.
1873	1160Gibbs, Jno. Dixon, Esq. *The Willows, Englefield-green, N.*
1870	Gibson, James Y., Esq. *Care of Messrs. Williams and Norgate, Henrietta-street, Covent-Garden, W.C.*
1877	Giles, Ernest, Esq. *Care of Hon. T. Elder, Adelaide, S. Australia.*
1877	Giles, Rev. Wm. Theophilus, M.A. *Netherleigh, Chester.*
1877	*Gilford, Rear-Admiral the Right Hon. Lord. 8, *Hereford-gardens, S.W.; and Admiralty, Whitehall, S. W.*
1874	Gill, Captain W. J., R.E. 1, *Edinburgh-mansions, Victoria-street; and Junior United Service Club, Charles-street, S.W.*
1855	Gillespie, Alexander, Esq. *Heathfield, Walton-on-Thames, Surrey.*
1866	*Gillespie, William, Esq. (*of Torbane-hill*). 46, *Melville-street, Edinburgh.*
1868	*Gillett, Alfred, Esq. 27, *Chesham-place, S.W.*
1863	*Gillett, William, Esq. 31, *Hertford-street, Mayfair, W.*
1868	1170Gilliat, Algernon, Esq. 7, *Lancaster-gate, W.*
1863	*Gillies, Robert, Esq., C.E. *Care of Messrs. Reith and Wilkie, Dunedin, Otago, N.Z. Per Messrs. Sampson Low and Co.*, 188, *Fleet-street, E.C.*
1874	*Gilman, Ellis, Esq. 53, *Sussex-gardens, Hyde-park, W.*
1877	Gisborne, Thomas Matthew, Esq. 41, *Upper St. Germain's-terrace, Blackheath.*

Year of Election.	
1864	Gladstone, George, Esq. 31, *Ventnor-villas, Cliftonville, Brighton.*
1863	Gladstone, J. H., Esq., PH.D. 17, *Pembridge-square, W.*
1862	*Gladstone, Robert Stuart, Esq. *Windham Club, S.W.*
1873	Glanville, Silvanus Goring, Esq. 52, *Threadneedle-street, E.C.*
1872	Glass, James George Henry, Esq. 28, *London-street, Edinburgh. Care of Messrs. H. S. King and Co.,* 45, *Pall-mall, S.W.*
1867	Glass, H. A., Esq. *St. Kilda, Vanbrugh-park, Blackheath, S.E.*
1854	1180 Glen, Joseph, Esq., Mem. Geogr. Soc. of Bombay. *Oriental Club, W.*
1857	Glover, Capt. Sir John H., R.N., G.C.M.G. 27, *Bury-street, St. James's, S.W.*
1866	Glover, Robert Reaveley, Esq. 22, *Great St. Helen's, E.C.*
1870	Glover, Colonel T. G., R.E. *Barwood, Hersham, near Esher, Surrey.*
1864	Glyn, Sir Richard George, Bart. *Army and Navy Club, S.W.*
1878	Goad, Thomas William, Esq. *Care of Messrs. Coutts and Co., Strand, W.C.*
1874	*Godman, F. Du Cane, Esq. 6, *Tenterden-street, W.; and Child Okeford-house, Blandford.*
1874	Goldsmid, Bartle, Esq. 32, *Nottingham-place, Marylebone, W.*
1863	Goldsmid, Maj.-Gen. Sir Frederic John, K.C.S.I., C.B. 3, *Observatory-avenue, Kensington; and United Service Club, S.W.*
1861	Goldsmid, Sir Julian, Bart. 105, *Piccadilly, W.*
1873	1190 Goldsworthy, R. Tuckfield, Esq. *Army and Navy Club.*
1860	Gooch, Thomas Longridge, Esq. *Team-lodge, Saltwell, Gateshead-on-Tyne.*
1877	Goodall, Abraham, Esq., F.R.C.S., Inspector-General of Hospitals (Retired List). 4, *Elvaston-place, Queen's-gate, S.W.*
1864	Goodall, George, Esq. *Junior Carlton Club, S.W.*
1864	*Goodenough, Lieut.-Col. W. H., R.A. 49, *Weymouth-street, Portland-place, W.*
1875	Goodinge, Jas. W., Esq. 18, *Aldersgate-street, E.C.*
1874	Goodliffe, Fras. Gimber, Esq. *Care of Messrs. Goodliffe and Smart,* 95, *Bishopsgate-street-within, E.C.*
1877	*Goodliffe, Henry, Esq. *Admiralty, S.W.; and Junior Athenæum Club, W.*
1877	Goodman, Alfred Wm., Esq. *Heath-house, Belvedere, Kent.*
1871	*Goodwin, William, Esq. 27, *Grosvenor-road, Birkenhead.*
1865	1200 *Goolden, Charles, Esq. *United University Club, S.W.*
1861	Goolden, Joseph, Esq. 18, *Lancaster-gate, W.*
1856	*Gordon, General the Hon. Sir Alexander H., K.C.B. 50, *Queen's-gate-gardens, South Kensington, S.W.*
1874	Gordon, Arthur Leo, Esq., C.M.G. *Wardhouse, Aberdeenshire; and* 42, *Duke-street, St. James's, S.W.*
1878	Gordon, Major Edward Smith, R.A. *Royal Carriage Department, Royal Arsenal, Woolwich; and Naval and Military Club, Piccadilly, W.*
1873	Gordon, J. Newall, Esq. *Morro Velho, Minas Geraes, Brazil; and* 49, *George-street, Portman-square, W.*
1874	Gordon, Robt., Esq., C.E. *Care of Mr. D. Nutt,* 270, *Strand, W.C.*
1870	Gordon, Russell Manners, Esq. *Care of Messrs. Robarts, Lubbock and Co.,* 15, *Lombard-street, E.C.*

Year of Election.	
1866	Gore, Colonel Augustus F. *Care of Messrs. Hallett and Co.,* 7, *St. Martin's-place, W.C.*
1853	Gore, Richard Thomas, Esq. 6, *Queen-square, Bath.*
1874	1210 Gore, Lieut. St. George C., R.E. *Care of Messrs. Grindlay and Co.,* 55, *Parliament-street, S.W.*
1859	Gosling, Fred. Solly, Esq. 20, *Spring-gardens, S.W.*
1870	Gottlieb, Felix Henry, Esq., J.P. *Singapore.*
1875	Gotto, Hy. Jenkin, Esq. *Croft-lodge, Highgate-road, N.W.*
1868	Gough, Hugh, Viscount, F.L.S. *Lough Cutra Castle, Gort, Co. Galway.*
1876	*Gould, Abraham, Esq. *Somerset-lodge,* 111, *Adelaide-road, N.W.*
1873	Gould, Rev. Jas. Aubrey. *L 4, Albany, W.*
1846	Gould, John, Esq., F.R.S., F.L.S. 26, *Charlotte-st., Bedford-square, W.C.*
1870	Gould, Rev. Robert John. *Stratfield Mortimer, near Reading.*
1872	Gourley, Colonel E., M.P. *Sunderland.*
1867	1220 Grabham, Michael, Esq., M.D.
1868	Graeme, H. M. S., Esq. *Care of Messrs. Grindlay and Co.,* 55, *Parliament-street, S.W.*
1869	Graham, Andrew, Esq. (Staff Surg. R.N.). *Army and Navy Club, S.W.*
1858	Graham, Cyril C., Esq., C.M.G., Governor of Grenada, *West Indies.*
1871	Graham, J. C. W. Paul, Esq. 1, *Carlisle-place, Victoria-street, S.W.; and Brooks's Club, St. James's-street, S.W.*
1874	Graham, James Henry Stuart, Esq. 1, *Belgrave-road, Shepherd's-bush, W.*
1875	Graham, Robert Geo., Esq. *St. Albans, Hampton-on-Thames.*
1868	*Graham, Thomas Cuninghame, Esq. *Carlton Club, S.W.; and Dunlop-house, Ayrshire.*
1870	*Grant, Andrew, Esq. *Invermay-house, Bridge of Earn, N. B.*
1863	*Grant, C. Mitchell, Esq.
1861	1230 Grant, Daniel, Esq. 12, *Cleveland-gardens, Hyde-park, W.*
1865	*Grant, Francis W., Esq. 40, *Pall-mall, S.W.*
1860	Grant, Lieut.-Col. James A., C.B., C.S.I., F.R.S. *E. India U. S. Club, S.W.;* 19, *Upper-Grosvenor-street, W.; and Househill, Nairn, N. B.*
1875	Grant, Jno., Esq. *Grampian-lodge, Putney.*
1878	Grant, Lieut. John Macpherson (92nd Highlanders). *The Castle, Ballindalloch, N. B.*
1862	Grant, Capt. J. Murray (Inspector Cape Frontier Police), Cape of Good Hope
1874	Grantham, Geo., Esq. *Barcombe-place, near Lewes.*
1876	Grattan, Edmund A., Esq., H. M. Consul, Antwerp., *Care of A. Bartholeyns, Esq., Canada-buildings, King-street, Westminster, S.W.*
1872	Gray, Andrew, Esq. 1, *Lime-street-square, E.C.*
1876	*Gray, Archibald, Esq. 37, *Holland-park, W.; and* 13, *Austin Friars, E.C.*
1870	1240 Gray, Charles W., Esq. 14, *Chester-terrace, Regent's-park, N.W.*
1871	Gray, Matthew, Esq. *St. John's-park, Blackheath, S.E.*
1875	*Gray, Matthew Hamilton, Esq. *St. John's-park, Blackheath, S.E.*
1873	Gray, Robert Kaye, Esq. *St. John's-park, Blackheath, S.E.*

Year of Election.		
1868		Gray, Lieut.-Colonel William. *Farley-hall, Reading.*
1862		Greathed, Maj.-Gen. Wilberforce W. H., C.B. *Pennington-house, Lymington.*
1863		Greaves, Rev. Richard W. 1, *Whitehall-gardens, S. W.*
1861		Green, Captain Francis (58th Regiment).
1876		Green, Geo., Esq. *Glanton-house, Sydenham-rise.*
1876		Green, Geo. P. E., Esq. 100, *Gower-street, Bedford-square, W.C.*
1871	1250	Green, Joseph E., Esq. 12A, *Myddelton-square, E.C.*
1876		Green, Colonel Malcolm, C.B. 78, *St. George's-road, S. W.*
1877		Green, Walter, Esq. 15, *Pall-mall, S. W.*
1868		Green, Rev. W., M.A. *Chaplain to the Tower of London.*
1869		Green, Major-General Sir W. H. R., K.C.S.I., C.B. 93, *Belgrave-road, S. W.*
1874		Greenfield, Thomas Challen, Esq. 84, *Basinghall-street, E.C.; and* 6, *Outram-villas, Addiscombe.*
1857		*Greenfield, W. B., Esq. 35, *Gloucester-square, Hyde-park, W.; and Union Club, S. W.*
1870		Greenup, W. Thomas, Esq. *The Leys, Cambridge.*
1858		*Gregory, Sir Augustus Charles. *Surveyor-General, Brisbane, Queensland, Australia.*
1858		Gregory, Charles Hutton, Esq., C.E. 1, *Delahay-street, Westminster, S. W.*
1860	1260	*Gregory, Francis Thomas, Esq. *Queensland.*
1858		*Gregory, Isaac, Esq. *Merchants'-college, Blackpool.*
1872		Gregson, George, Esq. 26, *Harley-street, Cavendish-square, W.*
1857		*Grellet, Henry Robert, Esq. *Care of M. Misa, Esq.*, 41, *Crutched Friars, E.C.*
1865		Grenfell, Henry R., Esq., M.P. 15, *St. James's-place, S. W.*
1830		*Greswell, Rev. Richard, M.A., F.R.S. 39, *St. Giles's-street, Oxford.*
1877		Grey, Albert, Esq., B.A. *St. James's-palace, S. W.*
1866		Grey, Charles, Esq. *The Cottage, Staines.*
1837		*Grey, Sir George, K.C.B.
1873		Grey, Major L. J. H., C.S.I. (Bengal Staff Corps). Political Agent, Bhawulpore State, Bhawulpore, Punjab. *Care of General Van Cortlandt,* 10, *Onslow-crescent, South Kensington, S. W.*
1864	1270	Grierson, Charles, Esq.
1876		Grierson, J., Esq., H.M.'s Consul, *Coquimbo. Care of Mrs. G. J. Cruikshank, Clair-villa, Saughtree, Dumfries.*
1874		Griesbach, C. L., Esq. 64, *Elgin-crescent, W.*
1878		Griffin, Colonel James T. *Seaton-house, Adamson-road, N. W.*
1877		Griffin, John, Esq. *Dunster-house, Mincing-lane, E.C.*
1861		*Griffith, Daniel Clewin, Esq. 20, *Gower-street, W.C.*
1839		Griffith, John, Esq. 16, *Finsbury-place South, E.C.*
1863		Griffith, Sir Richard. *Henderoyde-park, Kelso, N. B.*
1836		Griffith, Richard Clewin, Esq. 20, *Gower-street, W.C.*
1872		Griffiths, Arthur Edward, Esq. 25, *Talbot-square, Hyde-park, W.*
1877	1280	Griffiths, Rev. John. *Care of H. M. Ommanney, Esq.*, 24, *Surrey-street, Strand, W.C.*

Year of Election.	
1875	Grignon, James, Esq. 36, *Bury-street, St. James's, S. W.*
1855	Grindrod, R. B., Esq., M.D., LL.D., F.L.S., &c. *Townsend-house, Malvern.*
1872	Grinlinton, J. J., Esq. *Colombo, Ceylon. Care of Edward Woods, Esq.*, C.E., 3, *Great George-street, S. W.*
1861	Grosvenor, Lord Richard, M.P. 76, *Brook-street, Bond-street, W.*
1876	Grove, George, Esq. *Lower Sydenham, S.E.*
1877	*Grover, Captain George Edward, R.E. 28, *Collingham-place, South Kensington, S.W.*
1857	Gruneisen, Charles Lewis, Esq. 16, *Surrey-street, Strand, W.C.*
1876	Guillemard, F. H. H., Esq. *Eltham, Kent.*
1876	Gunn, Arthur, Esq. 4, *Oak-villas, Hampstead, N. W.*
1861	1290 Gunnell, Captain Edmund H., R.N. *Army and Navy Club, S. W.; and* 21, *Argyll-road, Campden-hill, W.*
1859	*Gurney, John H., Esq. *North Repps, Norwich.*
1857	Gurney, Samuel, Esq. 20, *Hanover-terrace, Regent's-park, N. W.*
1874	Gwynne, Fras. A., Esq. 15, *Bury-street, St. James's, S. W.*
1872	*Gwynne, James Eglinton W., Esq., C.E., F.S.A., J.P., &c. 97, *Harley-street, W.; and Cliff-house, Dovercourt, Essex.*
1876	Gwynne, Samuel G., Esq. *Shoul-hill College, Cannook, Stafford.*
1865	Gwyther, John Howard, Esq. *Ellerslie, Park-hill-road, Addiscombe.*
1870	Habicht, Claudius Edward, Esq. 114, *Ebury-street, Eaton-square, S. W.*
1878	Haddan, J. L., Esq. 25, *Great George-street, S.W.*
1874	Hadow, J. W., Esq. 13, *Bruton-street, Berkeley-square, W.; and* 14, *St. James's-square, S. W.*
1878	1300 Hadwen, John Henry, Esq. *Park-road, Wandsworth.*
1877	Haines, C. Henry, Esq., M.D. 1, *South-terrace, Cork.*
1874	Hairby, Edward, Esq. 22, *Victoria-villas, King Edward's-road, S. Hackney.*
1868	Hale, Rev. Edward, M.A. *Eton College; and United University Club, S.W.*
1877	Halford, F. B., Esq. 26, *Cleveland-gardens, Hyde-park, W.*
1853	Halifax, Right Hon. Viscount, G.C.B. 10, *Belgrave-sq., S. W.; and Hickleton, Yorkshire.*
1853	*Halkett, Rev. Dunbar S. *Little Bookham, Surrey.*
1853	*Halkett, Commander Peter A., R.N.
1874	Hall, Alex. Lyons, Esq. *Lyons-court, Ladbroke-road, Holland-park, W.*
1861	Hall, Charles Hall, Esq. *Watergate-house, Emsworth.*
1876	1310 Hall, Ed. Alg., Esq. 20, *Clarges-street, W.*
1869	*Hall, James MacAlester, Esq. *Killean.*
1862	Hall, James Tebbutt, Esq. *Fore-street, Limehouse, E.*
1871	Hall, Admiral Robert, C.B. 38, *Craven-hill-gardens, W.; and Admiralty, S.W.*

Year of Election		
1863		Hall, Thomas F., Esq., F.C.S. *Effingham-house, near Leatherhead.*
1876		Hall, Wm. Ed., Esq. 20, *Onslow-gardens, S.W.*
1853		Hall, Admiral Sir William Hutcheson, K.C.B., F.R.S. *United Service Club, S.W.; and* 48, *Phillimore-gardens, Kensington, W.*
1878		Hallowes, Francis, Esq. 7, *Savile-row, W.*
1872		*Halpin, Capt. R. C. 38, *Old Broad-street, E.C.*
1871		*Hamilton, Lieut. Andrew (102nd Regiment). *The House of Falkland, Fife; and Naval and Military Club, W.*
1862	1320	Hamilton, Archibald, Esq. *South-Barrow, Bromley, Kent.*
1877		Hamilton, Charles Edward, Esq. *Apsley-house, Whitchurch, Monmouth.*
1861		Hamilton, Lord Claude. 19, *Eaton-sq., S.W.; and Barons-court, Co. Tyrone.*
1830		*Hamilton, Captain Henry G., R.N. 71, *Eccleston-square, S.W.*
1876		Hamilton, Jno. G. C., Esq. 54, *Eaton-place, S.W.*
1869		Hamilton, Admiral Richard Vesey. 14, *East Coombe-villas, Blackheath, S.E.*
1861		Hamilton, Col. Robert Wm. (Grenadier Guards). *Guards' Club, Pall-mall, S.W.*
1863		Hamilton, Rowland, Esq. *Oriental Club, W.*
1872		Hamilton, Walter, Esq. 3, *Duke-street, Adelphi, W.C.*
1846		Hamilton, Rear-Admiral W. A. Baillie. *Macartney-house, Blackheath, S.E.*
1876	1330	*Hammond, Navig.-Lieut. G. C., R.N. *Care of the Hydrographic-office, Admiralty, S.W.*
1853		Hampton, Right Hon. Lord, G.C.B. 41, *Eaton-square, S.W.; and Westwood-park, Droitwich, Worcestershire.*
1874		Hanbury, R. W., Esq., M.P. *Ilam-hall, Ashbourne, Derbyshire.*
1876		Hancock, E. H., Esq. *Leigh-villa, The Avenue, Surbiton.*
1853		*Hand, Admiral George S., C.B. *U. S. Club, S.W.*
1860		*Handley, Benjamin, Esq. 56, *Eland-road, Lavender-hill, S.W.*
1874		Handley, Captain Francis (late I.N.). *Brighton Club,* 55, *Old Steine, Brighton.*
1866		Hanham, Commr. T. B., R.N. *Manston-house, near Blandford, Dorset.*
1861		*Hankey, Blake Alexander, Esq.
1874		Hankey, Reginald, Esq. 71, *Chester-square, S.W.; and Arthur's Club, S.W.*
1870	1340	*Hankey, Rodolph Alexander, Esq. 54, *Warwick-square, S.W.*
1857		Hankey, Thomson, Esq. 45, *Portland-place, W.*
1837		*Hanmer, Lord, F.R.S. 59, *Eaton-place, S.W.; and Hanmer-hall and Bettisfield-park, Flintshire.*
1874		*Hanmer, Philip, Esq., B.A. *Christchurch, New Zealand.*
1859		*Hansard, Henry, Esq. 13, *Great Queen-street, W.C.*
1875		Hanson, R. B., Esq., M.A. *St. Saviour's Grammar-school, Southwark, S.E.*
1874		Harberton, Viscount. 60, *Rutland-gate, S.W.*
1870		Harbord, Rev. John B., M.A. *Athenæum Club, Pall-mall, S.W.*
1840		*Harcourt, Egerton V., Esq. *Whitwell-hall, York.*
1864		*Hardie, Gavin, Esq. 5, *Queen-street, Mayfair, W.*
1864	1350	Harding, Major Charles. *Grafton Club,* 10, *Grafton-street, Piccadilly, W.*
1864		Harding, J. J., Esq. 1, *Barnsbury-park, Islington, N.*

Year of Election.

1864 Hardinge, Capt. E., R.N. 32, *Hyde-park-square, W.*

1877 Hare, Evan Herring, Esq. *St. John's-precincts, Putney, S.W.*

1875 Harford, Lieut. Henry Charles (99th Regiment). *Chatham Barracks.*

1871 *Hargrave, Joseph, Esq. *Fort Garry, Winnipeg, Manitoba, Canada. Care of the Hudson's Bay Company,* 1, *Lime-street, E.C.*

1874 Hargreaves, William, Esq.

1873 Harley, Colonel R. W., C.B., C.M.G. *Tobago.*

1868 Harper, J. A. W., Esq.

1871 Harris, Edwd., Esq. *Rydal-villa, Longton-grove, Upper Sydenham.*

1853 1360 Harris, Admiral the Hon. Sir E. A. J., K.C.B. *H.B.M.'s Envoy Extraordinary and Minister Plenipotentiary, The Hague, Holland. Messrs. Woodhead and Co.*

1859 Harris, Capt. Henry, H.C.S. 35, *Gloucester-terrace, Hyde-park, W.*

1874 Harris, Reader, Esq. *Temple Club, Arundel-street, Strand, W.C.*

1863 Harrison, Charles, Esq. 3, *Great Tower-street, E.C.*

1870 Harrison, Charles, Esq. 10, *Lancaster-gate, W.*

1865 *Harrison, William, Esq., F.S.A., F.G.S., &c. *Conservative Club, S.W.; Royal Thames Yacht Club,* 7, *Albemarle-street, W.; and Samlesbury-hall, near Preston, Lancashire.*

1877 Harrison, Wm. Arthur, Esq. 1, *Bath-street, Waterloo, Liverpool.*

1838 Harrowby, Right Hon. Dudley, Earl of, F.R.S. *Sandon-house, Lichfield; and Norton, Gloucestershire.*

1872 Harston, Edward F. B., Esq. 1, *Mornington-road, Regent's-park, N.W.*

1872 Hart, Frederick Ralph, Esq., F.R.A.S., Membre de la Société de Géographie de Paris. *Government-house, Trinidad, British West Indies. Care of Messrs. Sieveking, Droop, and Co.,* 7, *Crosby-square, E.C.*

1873 1370 Hart, Henry Neville, Esq. 107, *Harley-street, W.*

1875 Hart, James, Esq. *Winslow-house, South Norwood.*

1868 *Hart, J. L., Esq. 20, *Pembridge-square, W.*

1854 *Hartland, F. Dixon-, Esq., F.S.A., &c. 14, *Chesham-place, S.W.; and the Oaklands, near Cheltenham.*

1874 Hartley, Sir Chas. Aug., F.R.S.E., &c. 26, *Pall-mall, S.W.; and Reform Club, Pall-mall, S.W.*

1874 Hartnell, Rev. Bedford, M.A. *Clifton College, Bristol.*

1875 Harvey, Alex. S., Esq., H.M.'s Consular Service, China. 228, *Union-st., Aberdeen.*

1875 Harvey, Aug. Jno., Esq. 6, *Cromwell-terrace, Great Yarmouth, Norfolk.*

1863 Harvey, Charles, Esq. *Rathgar-cottage, Streatham, S.W.*

1867 Harvey, James, Esq. *Esk-street, Invercargill, Southland, New Zealand.*

1864 1380 Harvey, John, Esq. *Ickwell Bury, Biggleswade.*

1864 Harvey, John, Esq. 7, *Mincing-lane, E.C.*

1869 Harvey, John, Esq., LL.D. *Château Deslyons, Boulogne-sur-Mer.*

1866 Harvey, Richard M., Esq. 13, *Devonshire-street, Portland-place, W.*

1877 *Harvey, Wm. C., Esq. *City Liberal Club,* 71, *Queen-street, Cheapside, E.C.*

1871 *Harvie, Edgar Christmas, Esq. *City of London Club, Old Broad-street, E.C.*

1873 Harwood, S., Esq. *Hamilton-house, Leamington.*

Year of Election.		
1875		Haslam, Aug. Fred., Esq. 14, *Lawn-road, Haverstock-hill, N.W.*
1873		Hatherton, Lord. *Teddesley-park, Penkridge, Staffordshire.*
1875		Havilland, Rev. C. R. de. *Iver, near Uxbridge, Bucks.*
1858	1390	Hawker, Edward J., Esq. 37, *Cadogan-place, S.W.*
1873		Hawker, Geo. C., Esq. *Care of Messrs. Hazard and Caldecott,* 1, *New Basinghall-street, E.C.*
1876		Hawkins, Alf. Templeton, Esq. 20, *Great George-street, Westminster, S.W.*
1834		Hawkins, Francis Bisset, Esq., M.D., F.R.S. 146, *Upper Harley-street, W.; and Leweil-lodge, Dorchester.*
1840		*Hawkins, John, Esq.
1858		*Hawkins, Major-General J. Summerfield, R.E. *St. Leonards, St. James's-road, Malvern.*
1876		Hawkins, Rev. Joshua. *The Nest, Howard-road, South Norwood.*
1873		Hawkins, Rev. W. Bentinck L., F.R.S. 33, *Bryanston-square, W.*
1876		*Hawkshaw, Sir John, C.E., F.R.S. 33, *Great George-street, S.W.*
1861		Hawksley, Thomas, Esq., C.E. 14, *Phillimore-gardens, Kensington, W.*
1877	1400	Haxell, E. Nelson, Esq. *Lewgars, Kingsbury, Middlesex.*
1871		Hay, Andrew, Esq. *Oriental Club, Hanover-square, W.; and Bombay.*
1863		*Hay, Rear-Admiral Lord John, M.P., C.B. 15, *Cromwell-road, South Kensington, S.W.*
1852		*Hay, Rear-Admiral Sir J. C. Dalrymple, Bart., M.P., C.B., F.R.S. 108, *St. George's-square, S.W.; U. S. Club, S.W.; Dunragit, Glenluce; and Harrow-on-the-hill, N.W.*
1877		Hay, Capt. J. S. (Inspector-General of Houssa Forces). *Cape Coast Castle; and care of Mrs. Hay,* 49, *Eastbourne-terrace, W.*
1872		Hay, Jno. Ogilvy, Esq. (Hon. Magist. and J.P. Brit. Burmah). *Rangoon.*
1865		Hay, Lord William. *B* 5, *Albany, W.*
1872		Haydon, G. H., Esq. *Bethlehem Hospital, S.E.*
1874		Hayes, A. A., jun., Esq. *Care of Horace Farquhar, Esq.,* 9, *King William-street, E.C.*
1870		Haynes, Stanley L., Esq., M.D. *Malvern-link, Worcestershire.*
1864	1410	Haysman, James, Esq. *Burgess-hill, Finchley-road. N.W.*
1862		Head, Alfred, Esq. 13, *Craven-hill-gardens, Bayswater, W.*
1871		Head, Henry, Esq. *Stoke Newington, N.*
1871		Head, Geo. T., Esq. *East-cliff-house Grammar-school, Margate.*
1876		Headley, Robert, Esq. 20, *De Beauvoir-square, N.*
1874		Heard, Dr. Samuel S. *Derriguni-castle, Kenmare, Ireland; and* 14, *St. James's-square, S.W.*
1856		Heath, The Baron, F.R.S., F.S.A. 31, *Old Jewry. E.C.*
1863		Heathfield, W. E., Esq. 30, *King-street, St. James's.*
1861		Hector, James, Esq., F.R.S., M.D. *Care of Agent-General for New Zealand,* 7, *Westminster-chambers, Victoria-street, S.W.*
1877		Hederstedt, Henry Burdett, Esq., C.E. 72, *Lancaster-gate, W.*
1873	1420	Heeley, W. E., Esq. *Urban-lodge, Wimbledon-park-road, Wandsworth.*

Year of Election	
1876	*Hegan, Chas. John, Esq. *Oxford and Cambridge Club, Pall-mall, S.W.*
1871	Heinemann, N., Esq., PH.D. *Scientific Club, 7, Savile-row, W.*
1872	*Helme, Richard, Esq. *Walthamstow, Essex.*
1871	*Henderson, G., Esq., M.D., F.L.S. *Care of Messrs. King and Co., Pall-mall, S.W.*
1874	Henderson, Henry, Esq. 24, *Huntley-road, Elm-park, Liverpool.*
1853	Henderson, John, Esq. 2, *Arlington-street, Piccadilly, W.*
1874	Henderson, Major K. G. *Care of Sir C. M'Grigor, Bart., and Co.,* 25, *Charles-street, S.W.; and Naval and Military Club, Piccadilly, W.*
1866	Henderson, Patrick, Esq. *Care of George Reid, Esq.,* 11, *Crooked-lane, E.C.*
1876	*Henderson, P. L., Esq. 14, *Fenchurch-street, E.C.*
1875	1430 Heneage, Charles, Esq. *St. James's Club, Piccadilly, W.*
1844	*Heneage, Edward, Esq. *Stag's-end, Hemel Hempstead.*
1860	Hennessey, J. B. N., Esq. 1*st Asst. Trig. Survey of India, Dehra Dhoon. Care of Messrs. H. S. King and Co., Cornhill, E.C.*
1875	Henriques, Alfred G., Esq. 96, *Gloucester-terrace, Hyde-park, W.*
1838	*Henry, Wm. Chas., Esq., M.D., F.R.S. *Haffield, near Ledbury, Herefordshire.*
1861	*Henty, Douglas, Esq. *Chichester.*
1872	Herbert, Charles E., Esq.
1875	Herbert, H. Aug., Esq. 19, *Dorchester-place, Blandford-square, N.W.*
1857	Herd, Captain D. J. 2, *Norway-house, Limehouse, E.*
1876	Herries, Edward, Esq., C.B. *Athenæum Club, Pall-mall, S.W.*
1858	1440 Hertslet, Edward, Esq., C.B. *Librarian, Foreign-office, S.W.; and Belle-vue-house, Richmond.*
1871	Hertslet, Geo. Thos., Esq. *Lord Chamberlain's-office, St. James's-palace, S.W.*
1876	Hervey, Lord Francis, M.P. 17, *Clifford-street, W.*
1877	*Herz, Cornelius, Esq. *San Francisco. Care of W. F. A. Archibald, Esq.,* 8, *Fig-tree-court, Temple, E.C.*
1877	Hetherington, J. Newby, Esq. 62, *Harley-street, W.*
1861	Heugh, John, Esq. 12, *Upper Brook-street, W.*
1873	Hewitt, Richard, Esq. *Elmfield, Esher, Surrey.*
1840	*Heywood, James, Esq., F.R.S. *Athenæum Club, S.W.; and* 26, *Kensington-palace-gardens, W.*
1869	Heywood, Samuel, Esq. 171, *Stanhope-street, Hampstead-road, N.W.*
1860	Heyworth, Capt. Lawrence. *Junior United Service Club, S.W.*
1878	1450 Hicks, Alfred, Esq. 74, *Great Russell-street, W.C.*
1867	Higgins, Edmund Thomas, Esq., M.R.C.S. 22, *Bloomsbury-street, E.C.*
1877	Hight, Capt. Edward. 120, *Cromwell-road, South Kensington, S.W.*
1856	Hill, Arthur Bowdler, Esq. *South-road, Clapham-park, Surrey, S.W.*
1872	Hill, Clement L., Esq. *Foreign-office, S.W.*
1873	Hill, Henry, Esq. 122, *Leadenhall-street, E.C.*
1874	Hill, Capt. Jno., R.E. (Great Trig. Survey of India). *Dehra Dhoon.*
1872	Hill, Samuel, Esq., M.D. 22, *Mecklenburgh-square, W.C.*
1854	Hill, Colonel Sir Stephen J., K.C.M.G., C.B. *Army and Navy Club, S.W. Care of Capt. E. Barnett,* R.N., 14, *Woburn-square, W.C.*

Year of Election.		
1874		Hills, Lieut.-Colonel James, V.C., R.A., C.B. *Care of Messrs. H. S. King and Co., Cornhill, E.C.*
1858	1460	Hinchliff, T. Woodbine, Esq. 64, *Lincoln's-inn-fields, W.C.*
1862		*Hinde, Samuel Henry, Esq. *Windham Club, S. W.*
1876		Hirst, Walter O., Esq. 11, *Norfolk-street, Manchester,*
1873		Hirst, William Henry, Esq. 103, *Mottram-road, Staleybridge, Cheshire.*
1873		*Hirth, Dr. F. *Imperial Maritime Customs, China; and* 8, *Storey's-gate, S. W.*
1870		Hitchins, Capt. T. M., R.A. 34, *Edge-lane, Liverpool.*
1872		*Hoare, Henry, Esq. *Messrs. Hoare's Bank, Fleet-street; and St. James's-square, S. W.*
1868		Hoare, Samuel, Esq. 7, *Hereford-gardens, Park-lane, W.*
1876		Hobart, Major Bertie, R.A. *Care of R. N. Cust, Esq.,* 64, *St. George's-square, S. W.*
1876		Hobson, Rev. J. P., M.A. 4, *The Grove, Blackheath; and Worcester College, Oxford.*
1868	1470	Hobson, Stephen James, Esq. 10, *Regent's-park-road, N.W.*
1874		*Hochschild, His Excellency Baron (Swedish Minister). 5, *Hyde-park-street, W.*
1872		Hockin, Charles, Esq., M.A. 8, *Avenue-road, St. John's-wood, N. W.*
1875		Hodder, Edwin, Esq. *Ashford-villa, Willesden, N. W.*
1875		Hodge, Edward W., Esq. *Pendall, Bletchingley, Surrey; and* 4, *Langham-place, W.*
1869		Hodges, Henry, Esq. *Brondesbury-lodge Collegiate-school, Kilburn.*
1856		*Hodgson, Arthur, Esq. *Clapton-house, near Stratford-on-Avon.*
1871		Hodgson, Henry Tylston, Esq. *Harpenden, St. Albans.*
1861		*Hodgson, James Stewart, Esq. 24, *Prince's-gardens, S. W.*
1857		Hodgson, Kirkman Daniel, Esq., M.P. 8, *Bishopsgate-street, E.C.*
1869	1480	*Hodgson, William H., Esq. *Treasury-chambers; and* 1, *Whitehall-gardens, S. W.*
1868		Holdich, Capt. Thos. Hungerford, R.E. 24, *Colville-square, Bayswater.*
1839		*Holford, Robert S., Esq. *Dorchester-house, Park-lane, W.*
1867		Holland, Rev. Fred. Whitmore. *Evesham, Worcester.*
1861		Holland, Colonel James. *Southside, The Park, Upper Norwood, S.E.*
1873		Holland, Lieut. Swinton C., R.N. *Care of Messrs. Hildreth and Ommanney,* 41, *Norfolk-street, Strand, W.C.*
1875		*Hollebone, Fredk., Esq. *Ravensbourne-park, Catford-bridge, S.E.*
1871		*Hollingworth, Hy. Geo., Esq. 11, *Billiter-square, E.C.; and* 83, *Hereford-road, Bayswater, W.*
1876		*Hollist, Captain E. O., R.A. *Holly-house, Plumstead-common.*
1861		Holme, J. Wilson, Esq., M.A. 83, *St. George's-square, S. W.*
1876	1490	Holmes, John, Esq. 9, *Norfolk-road, St. John's-wood.*
1874		Holmwood, T. D., Esq., 7, *Church-terrace, Lee, Kent.*
1839		*Holroyd, Arthur Todd, Esq., M.D., F.L.S. *Master's-office, Sydney, New South Wales. Care of Edgar Howell, Esq.,* 3, *St. Paul's-churchyard, E.C.*
1857		Holroyd, Henry, Esq. 14, *Kensington-gardens-terrace, W.*

Year of Election		
1867		Holstein, The Marquez de Souza. *Lisbon. Care of the Portuguese Legation, 12, Gloucester-place, Portman-square, W.*
1869		Holt, George, Esq. *Union-street, Willenhall.*
1871		Holt, Henry F. W., Esq. *Redgrave, Victoria-road, Clapham-common, S.W.; and care of Messrs. King and Co., Cornhill, E.C.*
1872		Holt, Lieut. Sydney A., R.N. *Care of Messrs. Hildreth and Ommanney, 41, Norfolk-street, Strand, W.C.*
1864		Holt, Vesey, Esq. 17, *Whitehall-place, S.W.*
1873		Home, Lieut.-Colonel Robert, R.E. 25, *Kidbrooke-road, Blackheath, S.E.*
1857	1500	Homfray, William Henry, Esq. 6, *Storey's-gate, S.W.*
1875		Honeybourne, Jno. W. C., Esq. *St. Ives Grammar-school, Huntingdonshire.*
1864		Hood, Sir Alex. Acland, Bart. *St. Andrie's-park, Bridgwater, Somerset.*
1873		*Hood, F. Jacomb, Esq. *Conservative Club, S.W.*
1866		*Hooker, Sir Joseph, K.C.S.I., C.B., M.D., F.R.S., F.L.S., &c. *Director of the Royal Gardens, Kew.*
1868		Hooper, Alf., Esq. *City of London Club, Old Broad-street, E.C.*
1870		Hooper, George Norgate, Esq. 139, *King Henry's-road, Adelaide-road, N.W.*
1870		Hooper, Rev. Robert Poole. 31, *Cambridge-road, Brighton.*
1875		Hooper, Wm. Edwd. Parry, Esq. 29, *St. George's-road, Kilburn, N.W.; and 17, New-street, Spring-gardens, S.W.*
1875		Hooper, W. F., Esq.
1861	1510	Hopcraft, George, Esq. 3, *Billiter-square, E.C.*
1846		*Hope, Alex. James Beresford, Esq., M.P. *Arklow-house, Connaught-place, Hyde-park, W.; and Bedgebury-park, Hurst-green, Kent.*
1862		Hope, Capt. C. Webley, R.N. *Messrs. Hallett and Co., St. Martin's-place, W.C.*
1874		Hope, Percy, Esq. *Mosely-buildings, Manchester.*
1869		Hopkins, Capt. David, M.A.I. *H.M. Consul at St. Paulo de Loanda. Care of Mrs. Hopkins, Richmond-villa, Lordship-lane, Dulwich, S.E.*
1870		*Hopkins, Edward M., Esq. 3, *Upper Berkeley-street, Portman-square, W.*
1871		Hornby, Rev. James John, D.D. *Head Master of Eton College.*
1877		Horncastle, W. Geo., Esq. *The Acacias, Upper Clapton.*
1871		Horne, Francis, G. Esq. *Salmons, Caterham, Surrey.*
1876		*Horniman, Fred. Jno., Esq. *Surrey-house, Forest-hill.*
1869	1520	Horrex, Theophilus, Esq. 18, *Connaught-square, Hyde-park, W.*
1876		Horsley, Thomas, Esq. *King's Newton, Derbyshire.*
1868		Horton, James Africanus B., Esq., M.D., &c. *Care of Sir C. McGrigor, Bart., and Co., Charles-street, St. James's, S.W.*
1870		Hoseason, Captain John C., R.N. *United Service Club, S.W.*
1861		Hoskins, Capt. A. H., R.N. *Army and Navy Club, S.W. Care of Messrs. Woodhead, 44, Charing-cross, S.W.*
1877		Hoskold, Henry Davis, Esq., C.E.
1853		Houghton, Lord, D.C.L., F.R.S. *Travellers' Club, S.W.; The Hall, Bawtry; and Frystone-hall, Ferrybridge, Yorkshire.*
1874		Howard, A. C., Esq. 27, *Devonshire-place, Portland-place, W.; and Arthur's Club, S.W.*

Year of Election.

1876 Howard, Charles C., Esq. *Christchurch, Canterbury, New Zealand. Care of Mr. E. Stanford, Charing-cross, S.W.*

1869 Howard, John, Esq., C.E. *West-view-house, Topsham, Devon.*

1875 1530 Howard, Joseph, Esq. *Tottenham-green.*

1873 Howard, Morgan, Esq., Q.C. *Temple, E.C.*

1857 Howard, Samuel Lloyd, Esq. *Goldings, Loughton, Essex.*

1873 Howard, William, Esq. 3, *Roslyn-bank, Lyndhurst-road, Hampstead, N.W.*

1875 Hozier, Capt. Jno. W. (Scots Greys). 11, *Hobart-place, Eaton-square, S.W.*

1842 *Hubbard, Rt. Hon. J. Gellibrand, M.P. 24, *Prince's-gate, Hyde-park, W.*

1867 *Hubbard, William Egerton, Esq. *Leonardslee, Horsham.*

1867 *Hubbard, William Egerton, jun., Esq. *Leonardslee, Horsham.*

1871 *Hudleston, Wilfred, Esq. 23, *Cheyne-walk, S.W.*

1870 Hudson, George B., Esq. *Frogmore-hall, Hertford; and New University Club, St. James's-street, S.W.*

1872 1540 *Hudson, John, Esq. 4, 5, *and* 6, *Great St. Helen's, E.C.; and Thatched-House Club, St. James's-street, S.W.*

1876 Hughes, A. W., Esq. *Care of F. P. Baker, Esq.*, 4, *Bond-court, Walbrook, E.C.*

1857 Hughes, Captain Sir Frederic. *Pole, Hole, Wexford.*

1875 Hughes, J. Wm., Esq. *Bangor, Carnarvonshire.*

1873 Hughes, James, Esq. 328, *Camden-road, N.*

1876 Hughes, Joseph, Esq. *Pomfret-college, Pontefract.*

1877 Hughes, Pringle, Esq. *Middleton-hall, Wooler, Northumberland.*

1875 Hughes, Capt. W. Gwynne. 14, *St. James's-square, S.W.*

1865 Hughes-Hallett, Capt. F. C. *Junior United Service Club, S.W.*

1875 Hull, Staff-Comm. Thos. A., R.N. *Hydrographic-office, Admiralty, S.W.*

1838 1550 *Hume, Edmund Kent, Esq.

1877 Hume, Lieut.-Colonel Gustavus. 115, *St. George's-square, S.W.*

1873 Hunt, John, Esq. 22, *Lancaster-gate, Hyde-park, W.*

1868 Hunt, John Percival, Esq., M.D. 3, *Paradise-place, Green-lanes, N.*

1877 Hunt, W. G. Francis, Esq., R.N. *Junior Naval and Military Club, Pall-mall, S.W.*

1874 Hunt, William Thomas, Esq. 1, *Pembridge-villas, Bayswater, W.*

1876 Hunter, Major F. M. (Bombay Staff Corps). *Aden.* 60, *South-street, St. Andrew's, Fifeshire. Care of Messrs. H. S. King and Co., Cornhill, E C.*

1875 Hunter, John, Esq. 9, *New-square, Lincoln's-inn, W.C.*

1874 Hunter, Capt. J. Edward, R.N. *United Service Club, Pall-mall, S.W.*

1872 Hunter, W. W., Esq., B.A., LL.D. *Bengal.*

1876 1560 *Huntingford, Lieut. G., R.N. *Care of Rev. Dr. Huntingford, Valley-end, Bagshot.*

1877 Husband, John, Esq. *Goulton-road, Clapton.*

1872 Huson-More, James, Esq., M.A. 2, *Brook-street, Cheetham, Manchester.*

1871 Hutchins, F. Leigh, Esq. 22, *Queen's-gardens, Hyde-park, S.W.*

1873 Hutchins, Geo. Albert, Esq. *Felsted Pen, Spanish Town, Jamaica.*

1871 *Hutchinson, Colonel Alexr. Hadden, R.A., F.G.S. 4, *Leigham-terrace, Plymouth.*

Year of Election.	
1872	Hutchinson, Edward, Esq. 8, *Sumner-place, South Kensington, S. W.*
1864	Hutchinson, Capt. R. R. *Junior St. James's Club, St. James's-street, S. W.*
1877	Hutchison, John W., Esq. *Balinaghie, Castle Douglas, N. B.; and Conservative Club, S. W.*
1874	Hyndman, Hy. Mayers, Esq. 10, *Devonshire-street, Portland-place, W.*
1870	1570 *Hutton, Charles W. C., Esq. *Belair, Dulwich, S.E.*
1869	Huxley, Prof. T. H., F.R.S. 4, *Marlborough-place, St. John's-wood, N. W.; and* 28, *Jermyn-street, S. W.*
1860	*Hyde, Captain Samuel 8, *Billiter-square, E.C.*
1852	Illingworth, Richard Stonhewer, Esq. 9, *Norfolk-crescent, Hyde-park, W.*
1875	Impey-Lovibond, Col. Archibald, R.E. "*Riffhams,*" *Danbury, near Chelmsford, Essex.*
1850	*Imray, James Frederick, Esq. 89, *Minories, E.; and Beckenham, Kent.*
1878	Ince, Thomas Henry, Esq., F.Z.S. 63, *Carlton-hill, N. W.*
1861	*Ingall, Samuel, Esq. *Forest-hill, Kent, S.E.*
1851	Inglefield, Admiral Sir Edward A., C.B., F.R.S. *United Service Club, S. W.; and* 99, *Queen's-gate, S. W.*
1871	Inglis, Commander Charles D., R.N. *The Hopleys, Horringer, Bury St. Edmund's.*
1846	1580 Ingram, Hughes Francis, Esq. *University Club, S. W.*
1860	*Inskip, Capt. G. H., R.N. 1, *Huntiscombe-place, North-road, Plymouth.*
1852	*Inskip, Rev. Robert Mills, C.B. 1, *Huntiscombe-place, North-road, Plymouth.*
1877	Inverarity, Geo., Esq. 13, *Stanhope-gardens, S. W.*
1875	Inverurie, Fras. Alex., Lord. *Dunnichen, Forfar, N. B.; and Carlton Club, Pall-mall.*
1870	Irvine, James, Esq. 18, *Devonshire-road, Claughton, Cheshire.*
1864	*Irving, John, Esq. *Care of Messrs. Ebsworth and Sons,* 4, *Corbet-court, Gracechurch-street, E.C.*
1861	Irwin, James V. H., Esq. 5, *Alpha-place, St. John's-wood, N. W.*
1877	Isbister, William, Esq. 56, *Ludgate-hill, E.C.*
1877	Jack, R. L., Esq. *Care of William Jack, Esq.,* 19, *Lansdowne-road, Notting-hill, W.*
1873	1590 Jackson, F. H. Ward, Esq. 9, *Albion-street, Hyde-park, W.*
1871	Jackson, Henry, Esq., Lieut. late I.N. (Chief Surveyor of the Province of Wellington). *New Zealand.*
1871	Jackson, Richd. Belgrave, Esq. 16, *Addison-terrace, Kensington, W.*
1866	Jackson, Robert Ward, Esq. 136, *Inverness-terrace, Hyde-park, W.*
1871	Jackson, Thos. Hughes, Esq. *Manor-house, Birkenhead.*
1855	Jackson, William, Esq. 44, *Portland-place, W.*
1871	Jackson, Wm. Chas., Esq. 9, *Bucklersbury, E.C.*

Year of Election.	
1862	Jacomb, Thomas, jun., Esq. *Woodend, Hollington, St. Leonards-on-Sea.*
1875	Jagg, Rev. F. Charles. *Faversham, Kent.*
1878	Jago, Lieut.-Colonel John. *Penang. Care of L. P. Casella, Esq., South-grove, Highgate, N.*
1861	1600 James, William Bosville, Esq. 13, *Blomfield-road, Maida-hill, W.*
1870	James, William Morris, Esq. 8, *Lyndhurst-road, Hampstead, N.W.*
1877	James, Walter Knight, Esq. *Normal College, Colombo, Ceylon; and* 22, *Preston-street East, Edinburgh.*
1868	Jamieson, Hugh, Esq. *Junior Carlton Club, S.W.*
1877	Janvrin, A. F., Esq. 61, *Pall-mall, S.W.*
1862	*Jaques, Leonard, Esq. *Wentbridge-house, Pontefract, Yorkshire.*
1863	*Jardine, Andrew, Esq. *Lanrick-castle, Stirling.*
1863	*Jardine, Robert, Esq. *Castlemilk, Lockerby, N.B.*
1875	*Jardine, Robert, Esq. 21, *Queensbury-place, South Kensington, S.W.*
1871	Jarrad, Lieut. F. W., R.N. *Care of Edw. M. Roe, Esq., Royal Hospital Schools, Greenwich.*
1876	1610 Jarvis, F. C., Esq. 11, *Fitzroy-square, W.*
1876	Jeakes, Rev. James. 54, *Argyll-road, Kensington, W.*
1872	Jeffreys, A. F., Esq. *Fernhill, Bournemouth; and* 1, *Dr. Johnson's-buildings, Temple, E.C.*
1865	Jeffreys, J. Gwyn, Esq., LL.D., F.R.S. *Ware-priory, Herts.*
1876	Jeffries, Wm. H., Esq. 111, *Southgate-road, Islington, N.*
1875	Jeffs, Richard, Esq. 244, *Regent-street, W.*
1854	Jellicoe, Charles, Esq. 12, *Cavendish-place, W.*
1854	Jenkins, Capt. Griffith, I.N., C.B. *East India United Service Club, St. James's-square, S.W.; and Little Garth, Welshpool, Montgomeryshire.*
1837	*Jenkins, R. Castle, Esq. *Beachley, near Chepstow.*
1877	Jenkins, Commander R. P., R.N. 7, *Spencer-villas, St. James's-road, Croydon.*
1874	1620 *Jenkinson, H. Irwin, Esq. *Keswick, Cumberland.*
1875	Jennings, Samuel, jun., Esq. 58, *Granville-park, Blackheath.*
1854	*Jennings, William, Esq., M.A. 13, *Victoria-street, Westminster, S.W.*
1876	Jephson, Mountney, Esq. *Garrick Club, Garrick-street, W.C.*
1874	Jeppe, Le Chevalier Fred. *Care of Portuguese Consulate,* 10, *St. Mary Axe, E.C.*
1860	Jermyn, Rowland Formby, Esq. *War-office, S.W.*
1873	Jervis, Theodore, Esq. 48, *Vincent-square, S.W.*
1870	Jessop, Captain Thomas. *Honley, Huddersfield.*
1860	Jessopp, Rev. Augustus, M.A., Head Master, King Edward VI. School. *Norwich.*
1864	*Jeula, Henry, Esq. *Lloyd's, E.C.*
1874	1630 Jeune, Fras. H., Esq. 3, *Howick-place, Victoria-street, S.W.; and* 1, *Harecourt, Temple, E.C.*
1878	Jinman, George, Esq. *Carisbrooke, Forest-hill, S.E.*
1876	Joaquim, J. P., Esq. *Care of W. B. D'Almeida, Esq.,* 2, *Pump-court, Middle-Temple, E.C.*

Year of Election.	
1873	Jocelyn, Hon. W. Nassau. *Care of Foreign-office, S.W.*
1876	Johnson, F. Bulkeley, Esq. 5, *The Mount, St. Leonards-on-Sea; and Devonshire Club, St. James's Street, S.W.*
1876	Johnson, Joseph, Esq. 12, *Carleton-road, Tufnell-park, N.*
1876	Johnson, Murray, Esq. 20, *Austin Friars, E.C.*
1866	Johnson, W. H., Esq., Civil Assistant G. T. S. India.
1875	*Johnston, A., Esq. 18, *Paternoster-row, E.C.*
1868	*Johnston, Alexander Keith, Esq. 4, *Glo'ster-road, Kew.*
1876	1640 Johnston, Chas. Edwd., Esq. 10, *Hyde-park-gate, Kensington, S.W.*
1874	*Johnston, Capt. H. B. *United Service Club, Dublin; and Junior Carlton Club, Pall-mall, S.W.*
1857	Johnston, J. Brookes, Esq. 29, *Lombard-street, E.C.*
1875	Johnston, Robert, Esq. *Woodlands, Monkstown.*
1871	Johnston, T. B., Esq., F.R.S.E. 4, *St. Andrew-square, Edinburgh.*
1866	Johnstone, Colonel H. C., C.B., F.R.A.S. *Murree, Punjaub, India. Care of Messrs. H. S. King and Co., Cornhill, E.C.*
1867	*Johnstone, John, Esq. *Castelnau-house, Mortlake, S.W.*
1874	Johnstone, M. Butler, Esq., M.P. 8, *Seamore-place, Mayfair, W.*
1873	Johnstone, W. Woods, Esq., M.D. 44, *Prince's-square, W.*
1872	Jolley, Rev. Wm. Rowe, M.A., Hon. Chaplain to the Queen. *North Repps-rectory, Norwich.*
1875	1650 Jones, Arthur W., Esq. 10, *Eaton-square, S.W.*
1874	Jones, Edwin, Esq. *Fairlea, Bassett, Southampton.*
1864	Jones, Capt. Felix (late I.N.). *Fernside, Church-road, Westow-hill, Upper Norwood.*
1876	Jones, Hugh H., Esq. *Larkhill, Liverpool.*
1868	Jones, Capt. H. M., V.C. *Care of Messrs. Bickers & Son,* 1, *Leicester-square, W.C.*
1857	Jones, Lieut.-Col. Jenkin, R.E.
1862	Jones, John, Esq. 338, *Strand, W.C.*
1873	Jones, Rev. John. 11, *Petherton-road, Canonbury.*
1872	Jones, Staff-Commander Jno., R.N. *The Blue Bell, Welshpool, Montgomeryshire.*
1871	Jones, Robert, Esq. *Glanbrane-park, Llandovery, Carmarthenshire.*
1878	1660 Jones, Major R. Owen, R.E. *Ordnance Survey-office,* 43, *St. George's-road, S.W.*
1878	*Jones, R. T., Esq. 1, *St. Alban's-road, Highgate-hill, N.*
1876	*Jones, Thomas M. Rymer, Esq., C.E., Japan. *Care of T. R. Jones, Esq.,* 52, *Cornwall-road, Westbourne-park, W.*
1876	Jones, Rev. W. Taylor, M.A. *The College, Sydenham.*
1861	Jones, Sir Willoughby, Bart. *Cranmer-hall, Fakenham, Norfolk.*
1873	Jones, Winslow, Esq. *Devon and Exeter Institution, Exeter.*
1867	*Jordan, Wm. Leighton, Esq. *Scientific Club,* 7, *Savile-row, W.*
1863	*Joshua, Moss, Esq. *Bishopshalt, Hillingdon.*
1876	*Joyner, Henry Batson, Esq., C.E. *Yamato Yashiki, Tokei, Japan. Care of H. S. J. Joyner, Esq., Northwick-house, Harrow.*
1876	*Jupe, Jno., Esq. *Lloyd's, E.C.*

Year of Election.		
1876	1670	Kane, Dr. Matthew, M.D. *Sunninghill, Kingston-hill.*
1873		Kane, Dr. William. *Care of M. Kane, Esq.*, M.D., *Sunninghill, Kingston-hill.*
1868		Kantzow, Admiral H. P. de. 1, *Observatory-gardens, Campden-hill-road, W.*
1877		Karuth, Frank Oscar, Esq. *Oakhurst, The Knoll, Beckenham, Kent.*
1875		Kavanagh, T. Frank P., Esq. *Bedford-hotel, Covent-garden.*
1858		Kay, David, Esq. 19, *Upper Phillimore-place, Kensington, W.*
1876		Kay, H. C., Esq. 11, *Durham-villas, Kensington, W.*
1877		Keane, Richard F., Esq., C.E. 7, *Sussex-square, Hyde-park, W.*
1857		Keating, Right Hon. Sir Henry Singer. 11, *Prince's-gardens, S. W.*
1873		*Keightley, Alfred D., Esq. *Milnthorpe, Penrith, Westmoreland.*
1875	1680	Keir, Campbell M., Esq. *Oriental Club, Hanover-square, W.*
1875		Keir, Jno. Lindesay, Esq. *Fordlands, Bideford.*
1863		Keir, Simon, Esq. *Conservative Club, S. W.*
1874		Keller, M. Franz, C.E. *Carlsruhe.*
1860		*Kemball, Lieut.-Gen. Sir Arnold Burrowes, K.C.S.I., C.B. *United Service Club, S. W.*
1869		Kemp, Geo. L., Esq., Calcutta. *Care of Messrs. H. S. King and Co.*, 65, *Cornhill, E.C.*
1873		Kemp, Rev. Henry William, B.A. *The Charter-house, Hull.*
1863		Kempster, J., Esq. 1, *Portsmouth-place, Kennington-lane, Surrey, S.E.*
1861		Kennard, Adam Steinmetz, Esq. *Crawley-court, Winchester.*
1877		Kennard, James, Esq. *Noonsun-house, Stackslead, Manchester.*
1877	1690	*Kennaway, Sir John H., Bart. *Escot, Ottery St. Mary, Devon.*
1871		Kennedy, Henry Hyndham, Esq. *Union Club, S. W.*
1874		Kennedy, John, Esq., M.D. *East India United Service Club*, 14, *St. James's-square, S. W.*
1875		Kennedy, John, Esq. 13, *Brooklyn-road, Shepherd's-bush, W.*
1854		Kennedy, Rev. John, M.A. 27, *Stepney-green, E.*
1875		Kennedy, Rear-Admiral Jno. Jas., C.B. 1, *Cromwell-place, South Kensington, S. W.; and United Service Club, Pall-mall.*
1875		Kennedy, Colonel J. P., R.E. 66, *St. George's-square, S. W.*
1871		Kennion, Rev. George Wyndham, B.A. *All Saints'-vicarage, Bradford, Yorkshire.*
1875		Kent, Fras. A., Esq. *Kesgrave-hall, Suffolk.*
1872		Kerr, Alexander, Esq., Wellington, New Zealand. *Care of Norman S. Kerr, Esq.*, M.D., 42, *Grove-road, St. John's-wood, N. W.*
1874	1700	Kerr, Major-General Lord Mark, C.B. 18, *James-street, Buckingham-gate, S. W.*
1862		Kershaw, Wm., Esq. 16, *St. Mary Axe, E.C.; and Suffolk-lodge, Brixton-road, S. W.*
1875		*Kettle, Daniel W., Esq. *Hayes-common, Beckenham; and* 53, *Fleet-street, E.C.*
1876		*Kettle, H. A., Esq. *Hayes-common, Beckenham, Kent.*
1857		Keysell, Francis P., Esq. *Grove-house, Cheshunt.*
1864		*Kiddle, Staff-Commr. W. W., R.N. 70, *Upper Leeson-street, Dublin.*

Year of Election.		
1874		Killam, Frank, Esq. *Yarmouth, Nova Scotia.*
1864		Kimber, Dr. E. 13, *Park-villas, Shepherd's-bush, W.*
1874		Kincaid, Thomas, Esq. 9, *Lansdown-crescent, Glasgow.*
1875		King, E. H., Esq. *Killcott, Godalming, Surrey.*
1846	1710	King, Lieut.-Colonel Edward R. *Junior United Service Club, S.W.*
1870		King, Henry S., Esq. J.P. 65, *Cornhill, E.C.; 45, Pall-mall, S.W.; Manor-house, Chigwell, Essex; and Junior Carlton Club, S.W.*
1872		King, James, Esq. 12, *Claremont-terrace, Glasgow.*
1866		King, John, Esq. *Compton-field-place, Guildford, Surrey.*
1874		King, Hon. J. P. Locke. 38, *Dover-street, W.; and Brooklands, near Weybridge, Surrey.*
1877		King, Joseph, Esq. *Treleaven-house, Blundell-sands, Liverpool.*
1873		*Kingsley, Maurice, Esq. *Care of Mrs. Kingsley, Byfleet, Weybridge.*
1857		*Kinnaird, Arthur F., Lord, 2, *Pall-mall East, S.W.*
1878		Kirby, William, Esq. 3, *Park-terrace, Whitby, Yorkshire.*
1858		Kirk, John, Esq. M.D., H.M. Agent and Consul General, *Zanzibar.*
1863	1720	Kirke, John, Esq. *Oriental Club, W.*
1870		Kirkland, Major-Gen. John A. Vesey. *Wester Fordel, Milnathort, N.B.*
1868		Kisch, Daniel Montagu, Esq. 15, *Westbourne-park-terrace, W.*
1875		Kitchener, Lieut. H. H. *Care of W. Besant, Esq.,* 9, *Pall-mall East, S.W.*
1866		*Kitson, James, jun., Esq. *Spring-bank, Headingley, Leeds.*
1868		Kitto, Richard L. Middleton, Esq. *Preston-lodge, Prestonpans, N.B.*
1867		Knight, Andrew Halley, Esq. 62, *Holland-park, W.*
1875		Knight, Jno., Esq. *Care of Messrs. Swinburne and Parker, Bedford-row, W.C.*
1876		Knight, Wm. Duncan, Esq. *Avening-house, Greenhill-park, Hampstead.*
1862		Knollys, General Rt. Hon. Sir William T., K.C.B. *Eaton-square, S.W.*
1871	1730	Knollys, Lieut.-Col. W. W. (93rd Highlanders).
1874		Knowles, George, Esq., C.E. 11, *Queen's-gardens, Hyde-park, W.*
1867		Knox, Alex. A., Esq. 91, *Victoria-street, Westminster, S.W.*
1861		Knox, Thomas G., Esq., H. M. Consul General, *Siam. Care of Messrs. H. S. King and Co.,* 45, *Pall-mall, S.W.*
1874		Koppel, S., Esq. 64, *Kensington-gardens-square, W.*
1866		Kopsch, Henry, Esq. *Imperial Maritime Customs, China; and* 8, *Storey's-gate, S.W.*
1876		Kurnalkur, Abdul Hakk (extra Assist.-Commissioner). *Basim, Berar, India.*
1861		Kyd, Hayes, Esq., M.R.C.S. *Wadebridge, Cornwall.*
1875		Kynaston, Rev. Herbert. *Montpellier-lodge, Cheltenham.*
1859		Labrow, Lieut. Colonel Valentine H., F.S.A., F.G.S. *Mitre-court-chambers, Temple, E.C.; and Club-chambers, S.W.*
1849	1740	*Laffan, Maj.-Gen. Sir Robert Michael, R.E., K.C.M.G. *Army and Navy Club, S.W.*
6		Lafone, Alfred W., Esq. *The Elms, Halton.*
0		Laing, Arthur, Esq. 29, *Mincing-lane, E.C.*

Year of Election.	
1875	Laing, Joseph, Esq. 17, *Castelnau-villas, Barnes, S.W.*
1877	Laing, Robert A., Esq. 3, *St. Peter's-road, Croydon.*
1877	Laing, Seton, Esq. 9, *Hyde-park-gate, S.W.; and Reform Club, Pall-mall, S.W*
1869	Lamb, Hon. Edward William. *Brisbane, Queensland, Australia.*
1859	Lamb, Lieut. Henry, I.N. *H.M. India Store Department, Belvedere-road, Lambeth, S.E.*
1863	*Lambert, Alan, Esq. *Heath-lodge, Putney-heath, S.W.*
1877	*Lambert, C. J., Esq. 1, *Crosby-square, E.C.*
1875	1750 *Lambert, Cowley, Esq. *New University Club, St. James's-street, S.W.*
1876	Laming, James, Esq. 1, *Bryanston-place, Bryanston-square, W.*
1861	Lamont, James, Esq. 4, *Queen-street, Mayfair, W.*
1870	Lamplough, Charles Edward, Esq. *City of London Club, E.C.*
1866	Lampray, John, Esq. 16, *Camden-square, N.W.*
1864	Lampson, Sir C. M., Bart. 80, *Eaton-square, S.W.*
1838	*Lance, John Henry, Esq., F.L.S. *The Holmwood, Dorking.*
1859	*Lange, Sir Daniel A. *Lanehurst, Albourne, Sussex.*
1856	*Langler, John R., Esq., B.A. *Broxholme, Thurlow-hill, Lower Norwood, S.E.*
1871	Langworthy, Edward, Esq.
1876	1760 *Lansdell, Rev. Henry. *The Grove, Blackheath, S.E.*
1833	*Larcom, Major-General Sir Thomas Aiskew, Bart., R.E., K.C.B., F.R.S. *Heathfield, Fareham, Hants.*
1861	Lardner, Colonel John. *United Service Club, S.W.*
1873	Large, Robert Emmott, Esq. *The Elms, Portsmouth-road, Surbiton; and* 13, *South-square, Gray's-inn, W.C.*
1859	Larnach, Donald, Esq. 21, *Kensington-palace-gardens, W.*
1870	Lasseter, Frederic, Esq. 5, *Porchester-gate, Hyde-park, W.*
1870	Laughton, Lieut.-Col. George Arnold (Bombay Staff Corps), Superintendent Bombay Survey, *Bombay.*
1869	Laughton, J. K., Esq. *Royal Naval College, Greenwich.*
1876	*Laurie, Peter Geo., Esq. 9, *Arundel-gardens, Kensington-park, W.; Sulhamstead Abbots, near Reading, Berks; and Thatched-House Club, St. James's-street, S.W.*
1876	Lavies, Joseph Samuel, Esq. 11, *Warwick-square, S.W.*
1873	1770 Law, Geo., Esq. 544, *Oxford-street, W.C.*
1846	*Law, Hon. H. Spencer, M.A. 36, *Eccleston-square, S.W.*
1873	Law, Jas., Esq. 544, *Oxford-street, W.C.*
1874	*Lawes, Robert Murray, Esq. 9, *Clarges-street, Piccadilly, W.*
1870	Lawrence, Alexander, Esq. *Clyde-house, Thurlow-road, Hampstead, N.W.; and Windsor-chambers, Great St. Helen's, E.C.*
1876	Lawrence, A. M., Esq., jun. 17, *Thurlow-road, Hampstead, N.W.*
1874	Lawrence, Fred. W., Esq. *Oakleigh, Beckenham, Kent.*
1876	Lawrence, Hon. John Hamilton. 34, *Beaufort-gardens, S.W.*
1877	Lawrence, Sir J. J. Trevor, Bart., M.P. 9, *Prince's-gate, S.W.; and Burford-lodge, Dorking, Surrey.*

Year of Election.	
1870	Lawrence, the Right Hon. Lord, G.C.B., G.C.S.I. 26, *Queen's-gate, S.W.*
1870	1780*Lawrence, Philip Henry, Esq. 33, *Chancery-lane, W.C.*
1873	Lawrence, W. F., Esq. *New University Club, S.W.*
1868	Lawrie, James, Esq. 63, *Old Broad-street, E.C.*
1867	Lawson, William, Esq. 21, *Walham-grove, Fulham, S.W.*
1862	*Lay, Horatio N., Esq., C.B. *Burnham-market, Norfolk.*
1857	Layard, Right Hon. Austen H., D.C.L., H.M.'s Ambassador, *Constantinople.*
1876	Layard, Capt. Brownlow E. *Sheet-street, Windsor.*
1866	*Layard, Captain Brownlow Villiers (3rd West India Regt.). *Junior United-Service Club; and* 38, *Upper Mount-street, Dublin.*
1863	*Leaf, Charles J., Esq. *Old Change, E.C.; and The Rylands, Norwood, S.E.*
1875	*Leake, Sir Luke S., Knt. *Perth, Western Australia. Care of C. J. Wainwright, Esq.,* 162, *Highbury New-park, N.*
1875	1790Leared, Dr. Arthur. 12, *Old Burlington-street, W.*
1874	Leared, Jno., Esq. 12, *Old Burlington-street, W.*
1874	Learmonth, Andrew James L., Esq. *Junior United Service Club, S.W.*
1876	Learmonth, Thos. Livingstone, Esq. 45, *Gloucester-gardens, W.*
1873	Leaver, J. Cristopher, Esq., *Rostherne-house, Castlenau, Barnes, Surrey.*
1866	Lebour, G. A., Esq. *Weedpark-house, Dipton, Lintz-green, Durham.*
1853	*Le Breton, Francis, Esq. 21, *Sussex-place, Regent's-park, N.W.*
1861	Leckie, Patrick C., Esq. 7, *Palace-road, Roupell-park, Streatham, S.W.*
1870	Lecky, Capt. Squire Thornton Stratford (Royal Naval Reserve). 171, *Duke-street, Liverpool.*
1875	Lee, Albert, Esq. 16, *Wellington-st., Preston New-road, Blackburn, Lancashire*
1877	1800Lee, Henry, Esq., F.L.S., &c. *The Waldrons, Croydon.*
1868	Lee, John, Esq. *Grosvenor-cottage, Versailles-road, Anerley, S.E.*
1873	Lee, John Dunkin, Esq. *The Oaks, Belvedere-park.*
1874	Leeman, George, Esq., M.P. 7, *Dean's yard, Westminster, S.W.*
1874	Leeman, Rev. W. L. 16, *Trinity-place, Windsor.*
1878	Lees, Eli, Esq. 102, *Lancaster-gate, W.*
1869	*Lees, Lieutenant-Colonel Nassau, D.C.L. *Athenæum Club, S.W.*
1865	Le Feuvre, W. H., Esq., C.E.
1833	*Lefevre, Sir John George Shaw, M.A., D.C.L., F.R.S. 18, *Spring-gardens, S.W.*
1853	Lefroy, General Sir John Henry, R.A., K.C.M.G., F.R.S., &c. 82, *Queen's-gate, S.W.; and Athenæum Club, S.W.*
1862	1810Leggatt, Clement Davidson, Esq. 1, *Pinner's-court, Old Broad-street, E.C.*
1861	Legh, William John, Esq. 38, *Belgrave-sq., S.W.; and Lyme-park, Cheshire.*
1861	*Lehmann, Frederick, Esq. 15, *Berkeley-square, W.*
1845	Leigh, John Studdy, Esq., F.G.S. 6, *Talbot-road, Westbourne-park, W.*
1869	Leigh, Roger, Esq. *Barham-court; and Hindley-hall, Hindley.*
1877	Leighton, Thomas, Esq. *The Limes, West Brixton, S.W.*
1863	Le Mesurier, Henry P., Esq., C.S.I., C.E. 21, *Stanley-crescent, Kensington-park, W.*

Year of Election	
1874	Le Pays, Geo. Renatus, Esq. 38, *Brunswick-terrace, Brighton; and Thatched-House Club, S. W.*
1873	Leslie, William, Esq. *Warthill, Aberdeenshire, N. B.; and Carlton Club, Pall-mall, S. W.*
1867	L'Estrange, Carleton, Esq. *Carlton Club, S. W.*
1876	1820 Lethbridge, Edwin B., Esq. 42, *Coleman-street, Brighton.*
1873	Letts, Thomas, Esq. 2, *Crown-buildings, Queen Victoria-street, E.C.*
1876	Lever, J. O., Esq. 97, *St. George's-square, S. W.*
1857	Leverson, George B. C., Esq. 18, *Queensberry-place, Cromwell-road, S. W.*
1876	Leverson, Lieut. Julian Jno., R.E. 18, *Queensberry-place, Cromwell-road, S. W.*
1869	Leveson, Edward J., Esq. *Cluny, Crescent-wood-road, Sydenham-hill, S.E.*
1873	Levi, Professor Leone, F.S.A., &c. 19, *Richmond-crescent, Barnsbury, N.; and* 5, *Crown Office-row, Temple, E.C.*
1874	Levin, Nathaniel, Esq. 44, *Cleveland-square, W.*
1859	Levinsohn, Louis, Esq. *Vernon-house, Clarendon-gardens, Maida-hill, W.*
1876	Levy, B. W., Esq. 19, *St. Helen's-place, E.C.*
1873	1830 *Lewin, Frederick Dealtry, Esq. *Morelands, St. John's-park, Blackheath, S.E.*
1877	Lewin, F. Geo., Esq. 4, *Lombardian-villas, St. Mary's-road, Peckham, S.E.*
1869	*Lewin, Capt. Thomas H. (Beng. Staff Corps).
1876	Lewis, Francis T., Esq. 26, *Gresham-street, E.C.*
1872	Lewis, Jos., Esq., R.N. *Castle Carrow, Carrick-on-Shannon.*
1874	Lewis, Rev. R. C., M.A. *Streatham-common, S. W.*
1852	Leycester, Captain Edmund M., R.N. *White-place, near Maidenhead, Berks.*
1876	Leyland, R. Watts, Esq. 17H *Exchange-buildings North, Liverpool.*
1859	Lichfield, Right Hon. Thomas George, Earl of. *Shugborough, Staffordshire.*
1872	Liebenrood, Captain J., R.N. *Belmont-lodge, Lee, Kent.*
1870	1840 Light, Rev. John. 13, *Notting-hill-terrace, W.*
1856	Lilford, Thomas Lyttleton Powys, Lord. *Lilford-park, Oundle, Northamptonshire.*
1875	Lillingston, Lieutenant F. G. Innes, R.N. *Coillemore-house, Lochalsh, Ross-shire.*
1860	Lindsay, H. Hamilton, Esq. *Windham-place, Bryanston-square.*
1870	Lindsay, Lord, M.P. 47, *Brook-street, Grosvenor-square, W.*
1867	*Lindsay, Colonel Robert J. L., V.C., M.P. *Lockinge-house, Wantage, Berks; and* 2, *Carlton-gardens, S. W.*
1869	Lindsey, Mark John, Esq. 32, *Ludgate-hill, E.C.; and Burnt-ash-lane, Lee, Kent.*
1877	Lissa, Joseph Isaac Cohen de, Esq. *Port Louis, Mauritius.*
1875	Lister, Isaac S., Esq. *The Heath, Hampstead, N. W.*
1866	Little, Archibald J., Esq. *Shanghai; and* 18, *Park-street, Grosvenor-square, W.*
1871	1850 Little, Simon, Esq. *Calantra-house, Wexford, Ireland.*
1876	Littledale, Clement St. George, Esq. *Highfield, near Liverpool.*
1870	Littleton, The Hon. Henry S. *Teddesley, Penkridge, Staffordshire.*
1875	Littleton, Hon. Wm. F. 3, *Clifford-street, W.*

Year of Election.	
1877	Liversidge, Archibald, Esq., F.G.S., &c. *Care of Messrs. Trübner and Co.*, 57, *Ludgate-hill, E.C.*
1875	Lloyd, Capt. C. Henry. *Care of Messrs. Jno. Jupp and Co.*, 113, *Fenchurch-street, E.C.*
1874	Lloyd, Francis Aylmer, Esq. 23, *Queen's-terrace, Finchley-road, N.W.*
1857	*Lloyd, Hon. Geo. A. *Sydney, N.S.W.; and* 3, *George-yard, Lombard-st., E.C.*
1873	Lloyd, Percival, Esq.
1864	*Lloyd, W., Esq. *Myood-house, Wednesbury, Staffordshire.*
1867	1860Lloyd, Rev. William V., M.A.
1861	Lluellyn, Major Richard. *Army and Navy Club, S.W.*
1869	Lluellyn, Major William R., R.A. *Plymouth.*
1877	*Lobb, John, Esq. 89, *Farringdon-street, E.C.*
1868	Lobley, James Logan, Esq., F.G.S. 59, *Clarendon-road, W.*
1859	Loch, Henry Brougham, Esq. *Government-house, Isle of Man.*
1861	Loch, John Charles, Esq. 57, *Natherwood-road, West Kensington, W.*
1857	Loch, William Adam, Esq. 8, *Great George-street, Westminster, S.W.*
1874	Lock, Alfred G., Esq. *Roselands, Millbrook, Southampton.*
1864	Locke, John, Esq. 83, *Addison-road, Kensington, W.*
1858	1870Lockhart, William, Esq., F.R.C.S. 67, *Granville-park, Blackheath, S.E.*
1868	Lockhart, Captain Wm. Stephen Alexander.
1874	*Loder, Edmund Giles, Esq. 42, *Grosvenor-square, W.*
1872	Logan, Sir T. Galbraith, K.C.B., M.D. 40, *Hyde-park-square, W.*
1868	Lomonossoff, M. Alexis de. *Assist.-Sec. Geographical Society, St. Petersburg. Care of Messrs. Hamilton and Co.*, 32, *Paternoster-row, E.C.*
1860	Londesborough, Wm. Henry Forester, Lord. 38, *Berkeley-square, W.*
1830	*Long, George, Esq., M.A. 2, *Rhine-villas, Portfield, Chichester.*
1874	Long, Rev. James. 14, *Salisbury-square, Fleet-street, E.C.*
1857	*Long, W. Beeston, Esq.
1873	Longbottom, A. P., Esq., C.E.
1876	1880Longden, Major-General Henry Edward, C.B. 63, *Ennismore-gardens, S.W.; and United Service Club, S.W.*
1872	Longden, Sir J. R., K.C.M.G. *Government-house, Trinidad. Care of Mr. J. P. Martineau*, 13, *King's-road, Bedford-row, W.C.*
1865	*Longley, Lt.-Col. George, R.E. *Brooks's Club, St. James's-street, S.W.*
1847	Longman, Thos., Esq. *Paternoster-row, E.C.*
1870	*Longstaff, Lieut.-Colonel Llewellyn Wood. *Reform Club, Pall-mall, S.W.*
1861	Lonsdale, Arthur Pemberton, Esq.
1860	Looker, William Robert, Esq. *Melbourne, Australia. Care of Mr. Ashhurst*, 9, *Fenchurch-street, E.C.*
1875	Lord, W. Barry, Esq. *Downshire-hill-cottage, Hampstead, N.W.*
1874	Lorne, The Most Hon. the Marquis of, K.T., M.P. 1, *Grosvenor-crescent, S.W.*
1876	Lort, William, Esq. *Fron Goch Hall, Llanllugan, Viâ Berriew, Montgomeryshire.*
1875	1890*Lothian, Maurice Jno., Esq. *Woodcote-park, Blackshiels, N.B.*
1864	Lothian, Most Hon. William Schomberg, Marquis of. 15, *Bruton-street, W.*

Year of Election	
1873	Lovell, Thomas, Esq., M.I.C.E.
1873	Lovett, Major Beresford, R.E. *East India United Service Club*, 14, *St. James's-square, S. W.*
1856	Lovett, Phillips Cosby, Esq. *Liscombe-house, Liscombe, Leighton Buzzard.*
1867	Low, Alex. F., Esq. 84, *Westbourne-terrace, W.*
1875	Low, Chas. R., Esq. (Lieut. late I.N.) 16, *Glebe-place, Chelsea, S.W.*
1863	Low, S. P., Esq. 55, *Parliament-street, S.W.*
1858	Lowden, Rev. George Rouse. *St. Leonard-villa, Hanwell, Middlesex.*
1859	Lowe, Captain W. Drury. *Myria, Bettws-y-Coed, Llanrwst, North Wales.*
1830	1900 Lowry, Joseph Wilson, Esq. 39, *Robert-street, Hampstead-road, N.W.*
1873	*Lowther, Capt. Marcus, R.N. *Thornton, Ryde.*
1878	Loyd, Lieut. Lewis Vivian (Grenadier Guards). 16, *Grosvenor-place, S.W.*
1860	Loyd, Colonel W. K. *Union Club, S.W.*
1870	Luard, Captain Charles Edward, R.E. *Portsmouth.*
1873	Luard, Major-General R. G. A. 6, *Dane-road, St. Leonards-on-Sea.*
1866	Luard, Wm. Charles, Esq. *Llandaff-house, Cardiff; and Athenæum Club, S.W.*
1871	*Lubbock, Sir John, Bart, M.P., F.R.S., &c. *High-elms, Beckenham, Kent.*
1876	*Lucas, Arthur, Esq., C.E. 15, *George-street, Hanover-square, W.*
1877	Luck, F. G., Esq. *The Olives, Wadhurst, Sussex.*
1875	1910 Luckman, Alfred, Esq. 4, *Panton-street, Cambridge.*
1871	Ludlow, Edgar John David, Esq. *Care of Geo. Perry, Esq.*, 67, *Charlewood-street, St. George's-road, S.W.*
1873	Lugard, General Right Hon. Sir Edward, G.C.B. 10, *Albert-place, Victoria-road, Kensington, W.*
1872	*Lumsden, Colonel P. S., C.S.I. (Quartermaster-General, Bengal Army). *United Service Club, Pall-mall, S.W.*
1860	*Lumsden, Rev. R. C., M.A., F.R.A.S. *Maidenhead.*
1860	Lush, Hon. Sir Robert, Q.C. *Balmoral-house, Avenue-road, Regent's-park, N.W.*
1873	*Lushington-Tilson, Rev. W. R. Tilson Marsh, M.A. *Oxford and Cambridge Club, S.W.; Conservative Club, S.W.; and Stretham Manor, Isle of Ely.*
1877	Lutley, Robert George, Esq. *Care of Mrs. Lutley*, 11, *Baring-crescent, Exeter.*
1876	*Luttrell, Lieut. Alexander Fownes (Gren. Guards). *Guards' Club, Pall-mall, S.W.; and Dunster-castle, Somerset.*
1873	Lycett, Sir Francis, K.C.B. 18, *Highbury-grove, Highbury, N.*
1866	1920 Lydall, J. H., Esq. 12, *Southampton-buildings, Chancery-lane, W.C.*
1873	Lydgate, Robert, Esq. *Upper School, Peckham, S.E.*
1873	Lydgate, Wm., Esq. *The Castle School, Guildford.*
1869	Lye, John Gaunt, Esq. 14, *Kensington-gate, Hyde-park-south, W.*
1877	Lyell, Francis H., Esq. 9, *Cornwall-gardens, S.W.*
1861	*Lynch, Thomas Kerr, Esq. 31, *Cleveland-square, Hyde-park, W.*
1858	Lyne, Francis, Esq. 5, *Seagrave-place, Pittville, Cheltenham.*
1875	Lyne, Robt. E., Esq. *Royal Dublin Society, Dublin.*

Year of Election.		
1877		*Macalister, James, Esq. 95, *Bishopsgate-street-within, E.C.*
1877		Macartney, William Grey E., Esq. *St. Stephen's Club, Westminster, S.W.*
1875	1930	Macaulay, James, Esq. 7, *Albemarle-street, W.*
1873		Macaulay, William, Esq. 122, *Leadenhall-street, E.C.*
1863		Macbraire, James, Esq. *Broadmeadows, Berwick-on-Tweed.*
1876		Macdona, G. de Laudre, Esq. *Hilbre-house, West Kirby, Cheshire.*
1875		*Macdonald, James, Esq. 17, *Russell-square, W.C.*
1874		Macdonald, Colonel John (Beng. Staff Corps). *Care of Messrs. Grindlay and Co.*, 55, *Parliament-street, S.W.*
1871		Macdonald, William, Esq. *Yokohama, Japan. Care of Messrs. Knevitt and Co.*, 3, *Sun-court, Cornhill, E.C.*
1877		Macdonald, Wm. M., Esq. 15, *Rutland-gate, S.W.; and St. Martin's, Perth.*
1843		Macdonnell, Sir Richard Graves, K.C.M.G., C.B. *Athenæum Club, Pall-mall, S.W.*
1873		MacEachen, Archibald, Esq. "*Seaside,*" *Campbeltown, Argyll, N.B.*
1865	1940	Macfarlan, John G., Esq. *The Tower, Richmond-bridge.*
1876		Macfarlane, Donald, Esq., M.D. 11, *Southwick-place, Hyde-park, W.; and East India U. S. Club, St. James's-square, S.W.*
1874		Macfarlane, Donald H., Esq. 62, *Portland-place, W.*
1868		MacGregor, Lieut.-Col. C. M. 15, *Jermyn-street, S.W.*
1855		MacGregor, Duncan, Esq. *Athenæum Club, S.W.*
1872		*MacGregor, John, Esq., M.A. 7, *Vanbrugh-park East, Blackheath; and Athenæum Club, S.W.*
1845		*Macintyre, Patrick, Esq., F.S.A. 1, *Maida-vale, W.*
1859		Mackay, Rev. Alexander, LL.D. 2, *Hatton-place, Grange, Edinburgh.*
1870		Mackay, Nevile F., Esq.
1873		Mackelvie, Jas. Tannock, Esq. 21, *Victoria-st., S.W.; and* 7, *Albemarle-st., W.*
1877	1950	Mackenzie, Capt. Colin (78th Highlanders). *Naval and Military Club, Piccadilly, W.*
1860		*Mackenzie, James T., Esq. *Hatchford, Cobham, Surrey.*
1873		Mackenzie, William, Esq., M.D., C.B. 2, *Gloucester-houses, Gloucester-crescent, S.W.; and East India United Service Club, S.W.*
1864		*Mackeson, Edward, Esq. 13, *Hyde-park-square, W.*
1874		*Mackinlay, Andrew U., Esq. *Hazelhurst, Nutfield, Redhill.*
1862		Mackinlay, D., Esq. *Oriental Club, W.*
1867		Mackinlay, John, Esq., J.P., M.I.C.E. *Percy-house*, 15, *Percy-circus, W.C.*
1864		Mackinnon, C. D., Esq. *Care of Messrs. J. Clinch and Sons*, 9, *Austin Friars, E.C.*
1788		*Mackinnon, Rev. Donald Dimsdale, M.A. 26, *Bryanston-street, W.; and New University Club, St. James's-street, S.W.*
1865		*Mackinnon, W., Esq. *Balinakill, Clachan, Argyleshire; and* 7, *Lothbury, E.C.*
1872	1960	Mackintosh, Alex, Esq. 9, *Talbot-square, Hyde-Park, W.*
1861		Mackintosh, Alexander Brodie, Esq. *Oriental Club, W.; and Dunoon, Scotland.*
1860		Mackirdy, Lieut.-Gen. Elliot (69th Regiment). *U. S. Club, S.W.*
1873		Mackley, Thomas Cole, Esq. *Dunster-house, Mincing-lane, E.C.*

Year of Election	
1871	**Maclagan**, Lieut.-Gen. Robert, R.E. *Care of Messrs. Crawford, Colvin, and Co., 71, Old Broad-street, E.C.*
1871	**Maclaine**, Murdoch G., Esq., of Lochvay. *Oban, Scotland.*
1860	**Maclean**, William Crighton, Esq., F.G.S. 31, *Camperdown-place, Great Yarmouth.*
1859*	**MacLeay**, Sir George, K.C.M.G. *Pendell-court, Bletchingley.*
1870	**MacLeod**, Lieut. Angus, R.N. *Care of Messrs. Hallett and Co., 7, St. Martin's-place, W.C.*
1855	**Maclure**, Andrew, Esq. *Messrs. Maclure, Macdonald, and Macgregor, 97, Queen Victoria-street, E.C.*
1861	1970 **Maclure**, John William, Esq. *The Home, Whalley-range, Manchester.*
1861	**Macmillan**, Alex., Esq. 16, *Bedford-street, Covent-garden, W.C.*
1874	**MacMurdo**, Lieut.-General, C.B. *Rose-bank, Fulham.*
1871	**Macnab**, Duncan Macpherson, Esq. *Union Club, S.W.*
1874	**Macnamara**, Surg.-Maj. F. N., M.D. (Indian Army). 28, *Palace-gardens-terr., W.*
1878	**Macneill**, Duncan, Esq. 7, *Lothbury, E.C.*
1870	**Macturk**, John, Esq. 8, *Hillhead-gardens, Glasgow.*
1871	**MacVicar**, Lieut. Jno. A. (93rd Highlanders). *Naval and Military Club, 94, Piccadilly, W.*
1878	**McAlister**, Alex., Esq. 242, *Richmond-road, Hackney.*
1873	**McAlpin**, Donald A. L., Esq., R.N. 1, *Llanion-terrace, Pembroke Dock, South Wales.*
1873	1980 **McAlpin**, Kenneth W. A. G., Esq. *Llanion-terrace, Pembroke-dock, South Wales.*
1875	**McAndrew**, Maj.-Gen. G. (Bengal Staff Corps). *Care of Messrs. Grindlay and Co., 55, Parliament-street, S.W.*
1863	**McArthur**, Alex., Esq., M.P. *Raleigh-hall, Brixton-rise, Brixton, S.W.*
1867	**McArthur**, William, Esq. 1, *Gwydyr-houses, Brixton-rise, S.W.*
1872	**McCall**, John, Esq. 112, *Winston-road, Stoke Newington, N.*
1876	**McClean**, Rev. D. Stuart. *Norwood-rectory, Southall, Middlesex.*
1868	**M'Clean**, Frank, Esq., M.A., C.E. *Ferncliffe, Tunbridge Wells.*
1860	**M'Clintock**, Admiral Sir Francis Leopold, F.R.S. 29, *Kensington-gate, Palace-gate, W.; and United Service Club, S.W.*
1871	* **McClure**, Joseph Henry, Esq. 9, *Rumford-place, Liverpool.*
1876	**McConnell**, Jas. Edw., Esq., C.E. 2, *Dean's-yard, Westminster, S.W.*
1861	1990 * **McConnell**, W. R., Esq. 12, *King's-Bench-walk, Temple, E.C.; and Charleville, Belfast.*
1862	**McCosh**, John, Esq., M.D. *Junior United Service Club, S.W.*
1865	**McEuen**, D. P., Esq. 24, *Pembridge-square, Bayswater, W.*
1877	**McEwan**, John Thomas H., Esq. 3, *Stanley-gardens, Notting-hill, W.*
1874	**McGavin**, Alan Lawrie, Esq. *Cordon-lodge, Wanstead; and 2, Barge-yard, Victoria-street, S.W.*
1867	**McGregor**, Duncan, Esq. *Clyde-place, Glasgow.*
1869	**McGrigor**, Alexander Bennett, Esq. 19, *Woodside-terrace, Glasgow.*
1874	**McIlwraith**, Robert, Esq. 45, *Bedford-gardens, Campden-hill, W.*

Year of Election.	
1866	*McIvor, W. G., Esq., *Sup. of Chinchona Plantations, Ootacamund, Madras. Care of Mr. E. Bumpus, Holborn-bars, E.C.*
1873	McKerlie, P. H., Esq., F.S.A. Scot., &c. 26, *Pembridge-villas, Bayswater, W.*
1867	2000 *McLean, Hon. John. *Oamaru, New Zealand. Care of Messrs. Redfern, Alexander, and Co.*, 3, *Great Winchester-street-buildings, E.C.*
1876	*McLean, Robert Allan, Esq., F.G.S. *Duart-house, The Avenue, Eltham-road, Lee, S.E.*
1870	McLeod, Major-Gen. W. C. 62, *Gloucester-gardens, Hyde-park, W.; and* 14, *St. James's-square, S.W.*
1874	McMahon, Colonel A. *Care of Messrs. H. S. King and Co., Cornhill, E.C.*
1875	McMaster, James, Esq. 1, *Stanhope-gardens, Queen's-gate, S.W.*
1866	McNair, Major John F. A., R.A. *Care of Messrs. Codd and Co.*, 35, *Craven-street, W.C.*
1839	M'Neil, The Right Hon. Sir John, G.C.B. *Granton, near Edinburgh.*
1876	McNeill, Colonel J. C., V.C., C.B. *United Service Club, Pall-mall, S.W.*
1873	*McVean, Colin A., Esq., *Care of Rev. D. McVean, Bunessan, Scotland.*
1875	Madan, Rev. J. R., *Cedar-villa, Kensington, W.*
1872	2010 Magrath, Colonel John R. (Madras Artillery, Ret.). *Murhill, near Bradford-on-Avon, Wilts; and East India U. S. Club*, 14, *St. James's-square, S.W.*
1877	Mair, G. J. J., Esq., F.S.A. 41, *Upper Bedford-place, Russell-square, W.C.*
1874	Maitland, Rev. A. Gray. *Roseneath, Sydenham-park, S.E.*
1845	*Major, Richard Henry, Esq., F.S.A. *Athenæum Club, S.W.; and British Museum, W.C.*
1868	*Makins, Henry F., Esq. 8, *Palace-gate, Kensington, W.; and Reform Club, S.W.*
1858	Malby, John Walter, Esq. 15, *Richmond-villas, Seven-sisters'-road, Holloway, N.*
1862	*Malcolm, Major Edward Donald, R.E. *Edinburgh.*
1863	Malcolm, James, Esq. 22, *Prince's-gate, Knightsbridge, S.W.*
1843	*Malcolm, W. E., Esq. *Burnfoot, Langholme, near Carlisle.*
1876	Malden, B. Jno., Esq. 14, *Great Coram-street, Russell-square, W.C.*
1872	2020 Malleson, Colonel G. B. *Care of Messrs. Coutts and Co., Strand, W.C.*
1853	*Mallet, Chas., Esq. *Audit-office, W.C.; and* 7, *Queensbro'-terrace, Bayswater, W.*
1876	Maltby, F. Cecil, Esq. *Thatched-House Club, St. James's-street.*
1877	Man, Maj.-Gen. Henry (Madras Staff Corps). 2, *Palace-road, Surbiton.*
1870	Man, Captain J. Alexander, Imperial Maritime Customs, China. *Junior United Service Club, S.W.*
1872	Man, Captain William. *Care of Myles Fenton, Esq.*, 32, *Westbourne-terrace, Hyde-park, W.*
1872	Man, William, Esq. *Woodford, Essex.*
1875	Manchester, Wm. D. Montagu, Duke of. 1, *Great Stanhope-street, W.; and Kimbolton Castle, St. Neots.*
1874	Mann, H., Esq. *Belgrave-mansions, S.W.; and* 13, *Upper Brunswick-place, Brighton.*

Year of Election.	
1860	Mann, James Alexander, Esq., M.R.A.S.
1866	2030 Mann, Robert James, Esq., M.D. 5, *Kingsdown-villas, Wandsworth-common, S.W.*
1866	Manners, George, Esq., F.S.A. *Lansdowne-road, Croydon.*
1868	Manners-Sutton, Hon. Graham. 50, *Thurloe-square, S.W.*
1874	Manners-Sutton, Hon. Robert Henry. 12, *Queensberry-pl., S. Kensington, S.W.*
1856	Manning, Frederick, Esq. *Byron-lodge, Leamington; and* 8, *Dover-street, W.*
1864	*Mansell, Captain A. L. *Hydrographic-office, Admiralty, S.W.*
1869	Mantell, Sir John Iles. *County Police-court, Strangeways, Manchester.*
1859	Mantell, Walter Baldock Durant, Esq. *Wellington, New Zealand. Care of A. J. Woodhouse, Esq.,* 1, *Hanover-square, W.*
1873	Mantle, Wm. John, Esq. *Northgate, Lincoln.*
1876	Mappin, Joseph Chas., Esq. 35, *Dulwich-road, S.E.*
1869	2040 March, Edward Bernard, Esq., H.M. Consul, Callao. *Care of Messrs. King and Co.,* 45, *Pall-mall, S.W.*
1871	Margetts, William G., Esq. *St. Hildas, Greenhithe; and St. Stephen's Club, S.W.*
1872	Margöschis, John Thomas, Esq. *Care of Mrs. Margöschis, Brodie-villa, Leamington.*
1874	Marjoribanks, Edw., Esq. 134, *Piccadilly, W.*
1873	Markham, Captain Albert Hastings, R.N. 21, *Eccleston-square, S.W.*
1854	Markham, Clements Robert, Esq., C.B., F.R.S. 21, *Eccleston-square, S.W.; and Athenæum Club, S.W.*
1877	Marsh, Capt. H. C. 20, *Cambridge-terrace, Hyde-park, W.*
1857	Marsh, Matthew Henry, Esq. *Oxford and Cambridge Club, S.W.*
1876	Marshall, Horace Brooks, Esq. *Clifton-villa, Brixton.*
1862	*Marshall, J. G. Don, Esq. *Birkenshaw, Hawley, Farnboro'-station, Hants.*
1873	2050 Marshall, John, Esq. *Auckland-lodge, Queen's-road, Richmond.*
1862	Marshall, William, Esq. 71, *Mornington-road, W.*
1876	*Marshall, William, Esq. 37, *Norfolk-street, Strand, W.C.*
1859	*Marsham, The Hon. Robert. 5, *Chesterfield-street, Mayfair, W.*
1875	Marston, Edward, Esq. 188, *Fleet-street, E.C.*
1877	Marten, Chas. Henry, Esq. *Combe-lodge, Blackheath, S.E.*
1874	Marten, C. Rous, Esq. *Wellington, New Zealand.*
1871	Marten, Elliott, Esq., Vice-Consul, *Sarawak. Care of W. T. Marten, Esq.,* 30, *Great St. Helen's, E.C.*
1861	Martin, Henry, Esq. *Sussex-house, Highbury-new-park, N.*
1860	*Martin, Richard Biddulph, Esq. *Clarewood, Bickley.*
1862	2060 Martin, Thomas, Esq. *Beechwood, Withdean, near Brighton.*
1870	Martin, Wm. Coleman, Esq.
1871	Mason, Charles, A. J., Esq. 3, *Gloucester-crescent, Hyde-park, W.*
1875	Mason, Dr. Samuel. 44, *Finsbury-circus, E.C.*
1871	Master, Chas. Hoskins, Esq. *Barrow-green-house, Oxted, near Godstone, Surrey.*
1870	Masterman, Edward, Esq. 30, *Threadneedle-street, E.C.; and* 27, *Clement's-lane, Lombard-street, E.C.*

Year of Election.	
1870	Masterman, Edward, jun., Esq. 57½, *Old Broad-st., E.C.; and Walthamstow.*
1876	Masterman, T. W., Esq. 4, *Spencer's-hill, Wimbledon, S.W.*
1869	*Matheson, Alexander, Esq., M.P. 38, *South-street, Park-lane, W.; and Ardross-castle, Ross-shire, N. B.*
1874	*Matheson, Hugh Mackay, Esq. 3, *Lombard-street, E.C.*
1845	2070*Matheson, Sir James, Bart., F.R.S. 13, *Cleveland-row, S.W.; and Achany, Bonar-bridge, Sutherlandshire, &c.*
1871	Mathew, George Buckley, Esq. *Care of Messrs. Boddington and Co., St. Helen's-place, E.C.*
1874	Mathews, Chas. Edward, Esq. *Oakgate, Augustus-road, Edgbaston, Birmingham; and Arts Club, W.*
1872	Mathews, William, Esq., M.A. 49, *Harborne-road, Birmingham.*
1858	Mathieson, James Ewing, Esq. 77, *Lombard-street, E.C.; and West-heath-lodge, Hampstead, N.W.*
1878	Maturin, Wm. Henry, Esq., C.B. 5, *Courtfield-gardens, South Kensington, S.W.*
1873	Maude, Colonel G. A. *Royal Mews, Pimlico, S.W.*
1875	Maudslay, Athol, Esq.
1875	Maule, Geo. Norman, Esq. 1, *Hare-court, Temple, E.C.; and University Club, S.W.*
1871	Mawbey, Henry, Esq. 260, *Amhurst-road, Stoke Newington, N.*
1872	2080Maxwell, John, Esq. *Lichfield-house, Richmond.*
1855	May, Staff-Commr. Daniel John, R.N. *Care of Messrs. Case and Loudensack, 1, James-street, Adelphi, W.C.*
1876	May, Wm., Esq. *St. Mary Cray, Kent.*
1858	Mayer, Joseph, Esq., F.S.A. 68, *Lord-street, Liverpool.*
1875	Maynard, R. Russell, Esq. *Ventnor, Isle of Wight.*
1862	Mayne, Captain Richard Charles, R.N., C.B. 101, *Queen's-gate, S.W.*
1858	Mayo, Captain John Pole. *Army and Navy Club, S.W.*
1867	Mayson, John S., Esq., J.P. 5, *St. James's-square, Manchester.*
1863	Meade, The Hon. Robert Henry. *Colonial-office, S.W.; and 3, Belgrave-square, S.W.*
1874	Meadows, Dr. Alfred. 27, *George-street, Hanover-square, W.*
1875	2090Meakin, Edw. E., Esq. *Rosenfels, Red-hill, Surrey; and 22, Fenchurch-st., E.C.*
1872	Measom, George Samuel, Esq. *St. Margaret's, Twickenham.*
1871	Medhurst, Sir Walter H., Knt. 32, *Palace-gardens-terrace, W.; and Athenæum Club, S.W.*
1862	*Medlycott, Commander Mervyn B., R.N. *Care of Messrs. Woodhead and Co., 44, Charing-cross, S.W.*
1876	*Meiggs, John G., Esq. 7, *Craven-hill, Bayswater, W.*
1874	*Meinertzhagen, Daniel, Esq. 10, *Rutland-gate, S.W.*
1854	Melvill, Major-General Sir Peter Melvill. 27, *Palmeira-square, Brighton.*
1838	Melvill, P[illegible]lip, Esq., F.R.A.S. *Ethy-house, Lostwithiel, Cornwall.*
1877	Mendel, Samuel, Esq. *Chislehurst, Kent.*
1875	Menzies, Jas. Irvine, Esq. 76, *Stamford-street, S.E.*

Year of Election.	
1871	2100 Mercer, Henry C., Esq., B.A. *Denham-lodge, Uxbridge.*
1875	Mercer, Thomas, Esq. *Uxbridge.*
1868	Merewether, Colonel Sir William Lockyer, K.C.S.I., C.B. 31, *Linden-gardens, Kensington, W.; and India-office, S.W.*
1871	*Merritt, Douglas, Esq. *Leacote, Rhinebeck, New York. Care of H. L. Sherlock and Sons,* 9, *Canning-place, Liverpool.*
1866	Messiter, Charles A., Esq. *The Avenue, Brampford Speke, near Exeter.*
1871	Messum, Josiah Young, Esq., R.N., F.R.A.S. (Controller of H.M.'s Packet Services), *General Post-office, E.C.; and Bedford-villa, Sydenham-road, Croydon.*
1867	Metcalfe, Frederic Morehouse, Esq. *Wisbech, Cambridgeshire.*
1874	Methuen, Capt. Hon. Paul (Scots Fusilier Guards). *Guards' Club, Pall-mall, S.W.*
1871	Methven, Captain Robert. 44, *Chester-square, S.W.*
1837	*Mexborough, Right Hon. John Chas. Geo., Earl of. 33, *Dover-street, W.; and Methley-park, near Leeds.*
1865	2110 *Michell, General J. E., R.H.A. *Care of Mrs. Busch,* 45, *South Audley-street, W.*
1863	*Michie, A., Esq. 55, *Leadenhall-street, E.C.*
1873	Michie, Honourable Archibald, Q.C. 8, *Victoria-chambers, Victoria-street, S.W.; and Reform Club, S.W.*
1848	Middleton, Rear-Admiral Sir G. N. Broke, Bart. *Shrubland-park, Needham, Suffolk; and* 35, *Albemarle-street, W.*
1870	*Midwinter, William Colpoys, Esq. *Junior Carlton Club, Pall-mall, S.W.*
1868	*Miers, John William, Esq., C.E. 74, *Addison-road, Kensington, W.*
1866	Mildmay, Major Herbert St. John (Rifle Brigade).
1872	Miles, Lieut.-Col. Samuel Barrett (Bombay Staff Corps), Political Agent in Mekran. *Care of Messrs. King and Co.,* 45, *Pall-mall, S.W.*
1876	Miller, Chas. A. D., Esq. *Sherbrooke-lodge, Brixton, S.W.*
1874	Miller, David, Esq., R.N. *United Service Club, Pall-mall, S.W.*
1861	2120 *Miller, Captain Henry Matthew, R.N. *United Service Club, S.W., and Fernside, Sevenoaks.*
1868	Miller, Robert Montgomerie, Esq. *Culverden-grove, Tunbridge Wells.*
1853	*Miller, Admiral Thomas. *United Service Club, S.W.*
1861	Milligan, Joseph, Esq. 6, *Craven-street, Strand, W.C.*
1857	Mills, Arthur, Esq. 34, *Hyde-park-gardens, W.*
1877	Mills, Jno. Elliott, Esq. 2, *Somerset-cottage, Prior-park-road, Bath.*
1863	*Mills, John R., Esq. *Kingswood-lodge, Tunbridge Wells.*
1877	Millward, Victor, Esq., J.P. *Fair View, Redditch, Worcestershire.*
1860	Milman, Lieut.-Col. Everard S. *County Prison, Usk, Monmouthshire.*
1866	Milne, Admiral Sir Alex., Bart., G.C.B. 1, *Lowndes-street, S.W.; and Inveresk, Musselburgh.*
1867	2130 Milner, Rev. John, B.A. *The Rectory, Middleton-in-T[illegible]sdale, Darlington.*
1872	Mitchell, William Aug., Esq. *Marlboro'-villa, Lea-bridge-road, E.*
1874	Mitford, Col. Jno. Philip-Osbaldeston. *Mitford Castle, Morpeth, Northumberland; and Army and Navy Club, S.W.*

Year of Election.	
1851	*Mocatta, Frederick D., Esq. 9, *Connaught-place, W.*
1873	*Moffat, Rev. Dr. Robert. 64, *Knowle-road, Brixton-road, S.W.*
1868	Moffitt, John, Esq. *General Register Office of Seamen,* 6, *Adelaide-place, London-bridge, E.C.*
1873	Moleyns, Major T. A. de, R.A. 53, *Seymour-street, Portman-square, W.*
1861	Mollison, Alexander Fullerton, Esq.
1876	Molyneux, Lieut. W. C. F. 16, *Prince of Wales-terrace, Kensington, W.; and Junior United Service Club, S.W.*
1877	Money, Major Gerard Noel (Bengal Staff Corps). *Stodham-park, Petersfield; and care of Messrs. H. S. King,* 45, *Pall-mall, S.W.*
1871	2140Montagu, Jno. M. P., Esq. *Downe-hall, Bridport, Dorset, and Union Club, S.W.*
1862	*Montague, Lieut.-Colonel Horace. 6A, *Waterloo-place, S.W.*
1830	*Montefiore, Sir Moses, Bart., F.R.S., F.R.S.N.A. 7, *Grosvenor-gate, Park-lane, W.; and East-cliff-lodge, Ramsgate.*
1876	Montgomery, Jno. B. H., Esq. 33, *Mount-street, Grosvenor-square, W.*
1860	Montgomery, Robert Mortimer, Esq.
1865	Montgomery, Sir Robert, G.C.S.I., K.C.B. 7, *Cornwall-gardens, Queen's-gate, S.W.*
1874	Moodie, G. P. Esq. *Care of J. J. Pratt, Esq.,* 24, *Coleman-street, E.C.*
1839	Moody, General R. C., R.E. *Caynham-house, near Ludlow, Shropshire.*
1857	*Moor, Rev. Allen P., M.A., F.R.A.S. *St. Clement's-vicarage, Truro.*
1874	*Moore, Adolphus W., Esq. *India-office, S.W.*
1861	2150Moore, John Carrick, Esq., F.R.S. *Corswall, Wigtonshire; and* 113, *Eaton-square, S.W.*
1870	Moore, John, Esq. 36, *Mark-lane, E.C.*
1870	*Moore, Joseph, Esq. *Rydal-mount, Champion-hill.*
1870	Moran, Benjamin, Esq. 20, *Norfolk-terrace, Bayswater, W.; and* 5, *Westminster-chambers, Victoria-street, S.W.*
1872	*Morant, Major J. L. L. (R. Mad. Eng.). *Mountstuart, Ootacamund, Neilgherries, Madras Presidency. Care of Messrs. John Gladding and Sons,* 13, *Paternoster-row, E.C.*
1863	More, R. Jasper, Esq. *Linley-hall, Salop.*
1869	*Morgan, Delmar, Esq. 15, *Roland-gardens, South Kensington, S.W.*
1864	Morgan, D. L., Esq. (Deputy Inspector-General, R.N.). *Army and Navy Club, Pall-mall, S.W.*
1861	Morgan, Junius Spencer, Esq. 13, *Prince's-gate, Hyde-park, S.W.*
1866	Morland, Lieut. Henry, late I.N. *Assistant Dockmaster, &c., Bombay.*
1839	2160*Morris, Charles, Esq. *University Club, S.W.*
1871	Morris, Edwd. Ellis, Esq. *Care of H. Morris, Esq., Eastcote-house, St. John's-park, Blackheath, S.E.*
1877	Morris, Edward S., Esq. *Wanderers' Club, Pall-mall, S.W.; and Pontamman, Cross Inn, Carmarthenshire.*
1871	*Morrison, A[illegible]., Esq. 16, *Carlton-house-terrace, S.W.*
1863	Morrison, Colonel J. C. D. *United Service Club, Pall-mall, S.W.*
1867	Morrison, Pearson, Esq. *Care of John Hockin, Esq.,* 8, *Tokenhouse-yard, Lothbury, E.C.*

Year of Election.	
1865	Morson, Thomas, Esq. 124, *Southampton-row, Russell-square, W.C.*
1876	Mortimore, Foster, Esq. 78, *Eccleston-square, S.W.*
1873	Mosenthal, Adolph, Esq.
1869	Moser, Robert James, Esq. 45, *Bedford-square, W.C.*
1877	2170 Moses, Marcus Tertius, Esq. *Eberton-Leison-park; and* 11, *Eustace-street, Dublin.*
1869	Mott, F. T., Esq. 1, *De Montfort-street, Leicester.*
1861	*Mouat, Frederick J., Esq., M.D. (Surgeon-Major and Inspector-General of Prisons, Bengal Army, &c.). 12, *Durham-villas, Kensington, W.; and Athenæum Club, S.W.*
1868	*Mounsey, Aug. Henry, Esq, British Legation, Yedo. *Care of R. H. Mounsey, Esq., Castle-street, Carlisle.*
1871	*Mowatt, James, Esq., M.A. 51, *Notting-hill-square, W.; and Caius College, Cambridge.*
1871	*Mozley, H. W., Esq., M.A. *Eton College.*
1858	Mudie, Charles Edward, Esq. *Muswell-hill.*
1858	Mueller, Ferdinand, Esq., M.D., PH.D. *Director of the Botanical Gardens, Melbourne. Care of Messrs. Dulau and Co.,* 37, *Soho-square, W.*
1874	*Muir, Hugh B., Esq. 26, *Old Broad-street, E.C.*
1867	*Muir, Thomas, Esq. *Madeira; and* 24, *York-terrace, Regent's-park, N.W.*
1877	2180 Mullens, Rev. Joseph, D.D. 14, *Bloomfield-street, London-wall, E.C.*
1877	*Mullens, Josiah, Esq. *Burwood, Sydney, New South Wales.*
1876	Mulliner, Robt. Bouverie, Esq. *Grove-house, Grove-park, Chiswick.*
1875	Mundy, Daniel Louis, Esq. *Care of Messrs. Budden, Fissher, and Co.,* 48, *Fenchurch-street, E.C.*
1875	Munro, Dr. 11, *Park-lane, W.*
1873	Münster, His Excellency Count. (Ambassador of the German Empire.) *German Embassy,* 9, *Carlton-house-terrace, S.W.*
1869	Munton, Francis Kerridge, Esq. *Gloucester-house, Stonebridge-park, Willesden, N.W.*
1866	*Murchison, John H., Esq. *Junior Carlton Club, S.W.*
1859	Murchison, Kenneth R., Esq. 24, *Chapel-street, Park-lane, W.; and Brockehurst, East Grinstead, Sussex.*
1830	*Murdoch, Sir Thomas W. Clinton, K.C.M.G. 8, *Park-street, Westminster, S.W.; and* 88, *St. George's-square, S.W.*
1860	2190 Murray, George J., Esq. *Wootton-court, Canterbury; and Junior Carlton Club, S.W.*
1872	*Murray, G. S. D., Esq. 118, *Pall-mall, S.W.*
1868	*Murray, Henry, Esq. *Garrick Club, Garrick-street, W.C.*
1830	Murray, John, Esq. 50, *Albemarle-street, W.; and Newstead, Wimbledon, S.W.*
1872	*Murray, John, jun., Esq. 50, *Albemarle-st., W.; and Newstead, Wimbledon, S.W.*
1876	Murray, Lieut. John Geo., R.A. *Lisnamaudre, Crossdoney, Ireland.*
1870	Murray, T. Douglas, Esq. 34, *Portland-place, W.*

Year of Election.	
1860	*Murray, Major W. G. (Beng. Staff Corps). *Lairthwaite, Keswick, Cumberland; and Portigliolo, Ajaccio, Corsica.*
1870	Murray, William Vaughan, Esq., M.R.I., &c. 4, *Westbourne-crescent, Hyde-park, W.*

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Year of Election.	
1876	Nagaoka, M. J., Esq. (Justice). 3, *Adelphi-terrace, Strand, W.C.*
1876	2200 Nahishima, N. H., Esq. 41, *Clanricarde-gardens, Bayswater, W.*
1875	Naidu, P. Venkatakrishnama, Esq., Barrister-at-Law, High Court, Madras. *Care of Messrs. Binny and Co., Leadenhall-street, E.C.*
1865	Nairne, P. A., Esq. 2, *Grove-hill, Camberwell, S.E.*
1868	Napier of Magdala, Rt. Hon. Lord, G.C.B., G.C.S.I., F.R.S. *Care of Messrs. Coutts and Co., Strand.*
1876	Napier, Capt. Hon. Geo. *Care of Messrs. Grindlay and Co.*, 55, *Parliament-street, S.W.*
1861	Napier, William, Esq.
1871	Nares, Captain Sir George S., R.N., K.C.B. 23, *St. Philip's-road, Surbiton.*
1875	Neal, Capt. William. *Army and Navy Club, Pall-mall, S.W.*
1875	Needham, S. H., Esq., F.G.S. 5, *Mecklenburg-street, Mecklenburg-square, W.C.*
1873	Nelson, George Henry, Esq. *Wyggeston's Hospital Boys' School, Leicester.*
1857	2210 *Nesbitt, Henry, Esq. 12, *Victoria-villas, Kilburn, N.W.*
1875	Nesbitt, William, Esq. *Junior Carlton Club, Pall-mall, S.W.*
1869	Neville, Lieut.-Col. Edward. 6, *Bolton-gardens, South Kensington, S.W.*
1870	Newall, Wm. Johnstone, Esq. 33, *South-street, Park-lane, W.*
1868	Newbatt, Benjamin, Esq., F.S.S., &c. 7, *Vicarage-gardens, Campden-hill, W.*
1876	Newby, Edwin H., Esq. *Chatham-buildings, New-bridge-street, E.C.*
1867	Newdigate, Lieut.-Col. Francis W. (Coldstream Guards). 26, *Seymour-street, W.; and Byrkley-lodge, Needwood Forest, Burton-upon-Trent.*
1876	Newman, Geo. G., Esq. 75 *and* 76, *Cornhill, E.C.*
1856	Newman, Thomas Holdsworth, Esq. 9, *Gt. Cumberland-place, Hyde-park, W.*
1873	Newton, Alfred P., Esq. 15, *Sheffield-gardens, Campden-hill, W.*
1872	2220 Newton, Wm., Esq. 11, *Mitre-court, Temple, E.C.*
1870	Nicholas, W., Esq. 2, *Shirley-villas, Prospect-hill, Walthamstow.*
1870	Nicholl, Henry John, Esq. 16, *Hyde-park-gate, W.*
1865	*Nichols, Robert C., Esq. 5, *Sussex-place, W.*
1856	Nicholson, Sir Charles, Bart., D.C.L. *The Grange, Totteridge, Herts, N.*
1875	Nicholson, Robert, Esq. *Loan End-house, Norham, near Berwick-on-Tweed, Northumberland.*
1868	Nicol, Geo. Wm., Esq. 312, *South Lambeth-road, S.W.*
1869	*Nicol, Robert, Esq. *Reform Club, S.W.; and Westminster-palace-hotel, S.W.*
1868	Nicol, Wm., Esq. 10, *Ashley-street, Victoria-street, S.W.; and Fawsyde, Kenneff, Kincardine.*
1877	Nicolle, Wm., Esq., M.A. 107, *Lansdowne-road, Notting-hill, W.*

Year of Election.	
1871	2230 **Nicols, Arthur Robert, Esq.** 11, *Church-row, Hampstead, N. W.*
1836	Nicolson, Vice-Admiral Sir Frederick Wm. Erskine, Bart., C.B. 15, *William-street, Lowndes-square, S. W.*
1873	Nimmo, Rev. R., B.A., R.N. *Mill-house, Grantchester, near Cambridge; and H.M.S. 'Lord Warden.'*
1858	Nix, John H., Esq. 77, *Lombard-street, E.C.*
1874	*Noldwritt, Jno. Spencer, Esq. 352, *Albany-road, Camberwell, S.E.*
1857	*Nolloth, Admiral Matthew S. A 12, *Albany, Piccadilly, W.; and United Service Club, S. W.*
1876	Norman, Capt. Charles B. 13, *Northbrook-road, Lee, S.E.*
1865	Norman, H. J., Esq. 4, *Halkin-street, Grosvenor-place, S. W.*
1877	Norman, Lieut.-General Sir H. W., K.C.B. 16, *Westbourne-square, W.*
1876	Normandy, Frank, Esq. 6, *Church-meadows, West-hill, Sydenham, S.E.; and* 3, *Garden-court, Temple, E.C.*
1872	2240 Norris, Charles, Esq. 124, *Wood-street, E.C.; and Marischal-road, Lee, Kent.*
1860	Norris, Harry, Esq. *Colonial-office, S.W.; and* 4, *Little St. James's-street, S. W.*
1861	North, Alfred, Esq. 23, *Lansdowne-crescent, Notting-hill, W.*
1865	Northumberland, Algernon George, Duke of. 2, *Grosvenor-place, S.W.*
1875	Norton, Geo., Esq., M.A. 2, *Gloucester-place, Hyde-park, W.*
1877	Norton, Henry Turton, Esq. 33, *Cornwall-gardens, Queen's-gate, S.W.*
1862	Notman, Henry Wilkes, Esq. 7, *Great Marlborough-street, W.*
1862	Nourse, Henry, Esq. *Athenæum Club, S. W.*

Year of Election.	
1875	Oates, Wm. Edward, Esq. *Meanwoodside, near Leeds.*
1858	Ogilvie, Edward D., Esq. *Yulgillar, Clarence-river, New South Wales. Care of Messrs. Marryat and Sons, Laurence Pountney-lane, E.C.*
1875	2250 Ogilvie, Geo. M., Esq. 14, *St. James's-square, S.W.; and Raleigh Club, Regent-street, S. W.*
1863	Ogilvy, Col. Thos. 23, *Grafton-street, Piccadilly, W.; and Ruthven, Forfarshire, N. B.*
1877	O'Halloran, Joseph Sylvester, Esq. 1, *Whitehall-gardens, S. W.*
1876	*O'Keeffe, Commr. Yelverton, R.N. 14, *Avington-grove, Penge, S.E.*
1873	Older, W. Aug., Esq. *Carrington-lodge, Richmond.*
1861	Oldershaw, Capt. Robert Piggott. 74, *Warwick-square, Belgrave-road, S. W.*
1874	Oldham, Surgeon-Major C. F. *Care of Messrs. Grindlay and Co.,* 55, *Parliament-street, S. W.*
1870	Oldham, Henry, Esq., M.D. 4, *Cavendish-place, W.*
1855	Oliphant, Laurence, Esq. *Athenæum Club, S. W.*
1878	Oliver, George, Esq. 79½ *Gracechurch-buildings, E.C.*

Year of Election

1866 2260 Oliver, Major S. P., 12th Brigade R.A. *Care of Rev. W. Oliver, Bovinger-rectory, Ongar, Essex.*

1877 Ommanney, Major Edward Lacon (Bengal Staff Corps). *Woodville-house, Shooter's-hill-road, Blackheath, S.E.*

1845 *Ommanney, Admiral Sir Erasmus, C.B., F.R.S., F.R.A.S. 6, *Talbot-square, Hyde-park, W.; and United Service Club, S.W.*

1838 *Ommanney, H. M., Esq. *Blackheath, S.E.*

1867 Ormathwaite, John Benn-Walsh, Lord. 28, *Berkeley-square, W.*

1873 *Ormerod, Henry Mere, Esq. *Broughton-park, Manchester.*

1873 Orpen, F. H. S., Esq. *Barkly, Griqualand West, South Africa.*

1875 Orred, Chas. F. d'Angers, Esq. 34, *Rutland-gate, S.W.*

1853 Osborn, Sir George R., Bart. *Travellers' Club, S.W.; and Chicksand-priory, Beds.*

1861 *Osborne, Lieut.-Col. Willoughby. *Political Agent, Bhopal, Sehira, India.*

1875 2270 Osbourne, Jno. Smyth, Esq., jun. *Heath-house, Stapleton, Bristol.*

1852 Oswell, William Cotton, Esq. *Groombridge, Kent.*

1877 Otter, Baron Frederic von. (Minister of Marine.) *Care of Mr. Thorsten Nordenfelt,* 1, *St. Swithin's-lane, E.C.*

1875 Overall, Wm. Henry, Esq., F.S.A. *Guildhall, E.C.*

1870 *Overbeck, Baron de. *Hong-Kong. Care of Messrs. King and Co.,* 65, *Cornhill, E.C.*

1875 Overbury, E. N., Esq. (Madras Civil Service). 14, *St. James's-square, S.W.*

1844 *Overstone, Samuel, Lord, M.A., M.R.I. 2, *Carlton-gardens, S.W.; and Wickham-park, Surrey.*

1873 Oxenham, Edward Lavington, Esq. *Nutcombe-house, Weybridge, Surrey.*

1875 Oxley, Fredk., Esq. 23, *Gloucester-crescent, Hyde-park, W.*

1868 Owden, Thomas S., Esq. *Mount-pleasant, Philip-lane, Tottenham.*

1874 2280 Packe, William, Esq. 1, *Cavendish-square, W.*

1873 Page, George Gordon, Esq., C.E. 4, *Great James-street, Gray's-inn, W.C.*

1878 Page, Henry, Esq. *Dulwich-common, S.E.*

1877 Page, Wm. Irving, Esq. *Wimbledon-common, S.W.*

1878 Paine, Geo. Wm., Esq. *Cotswold-lodge, Farquhar-road, Dulwich-wood-park, Upper Norwood.*

1876 *Pallett, Robt. Hy. Chas., Esq. *Theydon-hall, Theydon Bois, Essex.*

1870 Palmer, F. J., Esq., R.N. 50, *Finsbury-square, E.C.*

1865 *Palmer, Captain George, R.N. *Midgard, Hawick, Roxburghshire.*

1870 *Palmer, John Linton, Esq., Surg. R.N. 24, *Rock-park, Rockferry, Cheshire.*

1872 Palmer, Rev. Joseph, B.A., &c. *Wells, Somerset.*

1873 2290 Palmer, J. Horsley, Esq. 56, *Cromwell-road, Queen's-gate, S.W.*

1838 *Palmer, Samuel, Esq.

1869 *Palmer, T. G. A., Esq. 5, *Paper-buildings, Inner Temple. E.C.*

1870 Pannel, Charles S., sq. *Walton-lodge, Torquay.*

Year of Election.	
1865	*Papengouth, Oswald C., Esq., C.E. *Care of W. Hornibrook, Esq.,* 6, *Regent's-square, W.C.*
1863	*Paris, H.R.H. le Comte de.
1864	Parish, Captain A. 1, *Wellington-place, Guildford.*
1876	*Parish, Chas. Woodbine, Esq. *Quarry-house, St. Leonards-on-Sea.*
1849	*Parish, Capt. John E., R.N. 3, *Howick-place, Victoria-street, S.W.*
1833	*Parish, Sir Woodbine, K.C.H., F.R.S., &c. *Quarry-house, St. Leonards-on-Sea.*
1874	2300 Park, Abraham, Esq. *Warrington-terrace, Ashton-under-Lyne ; and Morningdale-house, Renfrewshire, N. B.*
1873	Park, James Dickson, Esq. 48, *Queen's-gate-gardens, South Kensington, S.W.*
1866	Parker, Capt. Francis G. S. (54th Regiment), F.G.S., A.I.C.E. *Morar, Gwalior.*
1875	*Parker, Honourable Francis. 94, *Eaton-square, S.W. ; and* 9, *King's-Bench-walk, Temple, E.C.*
1873	Parker, James, Esq. 45, *Leinster-square, Hyde-park, W.*
1850	Parkes, Sir Harry S., K.C.B., H.M. Minister Plenipotentiary, &c., in Japan.
1873	Parkin, George Lewis, Esq. 22, *Park-lane, W.*
1877	Parkin, Thomas, Esq., M.A. 29, *Boulevard Haussmann, Paris. Care of Rev. John Parkin, Halton-vicarage, Hastings.*
1850	*Parkyns, Mansfield, Esq., F.Z.S. *Arthur's Club, St. James's-street, S. W. ; and* 59, *Prince's-square, Bayswater, W.*
1876	Parlane, Jas., Esq. *Appleby-lodge, Rusholme, Manchester.*
1877	2310 Parr, Commander Alfred A. Chase, R.N. *Powys-lodge, Bickley, Kent.*
1872	Parry, Edward, Esq. 290, *Camden-road, N.W.*
1872	*Parry, Francis, Esq. 2, *Stanhope-gardens, Cromwell-road, S.W.*
1873	Pasco, Captain Crawford, R.N. *Care of Messrs. Case and Loudensack,* 1, *James-street, Adelphi, W.C.*
1874	Pass, Elias A. de, Esq. *The Lodge, Bembridge, Isle of Wight.*
1859	Pasteur, Marc Henry, Esq. 38, *Mincing-lane, E.C.*
1867	Paterson, John, Esq. 15, *Coleman-street, E.C.*
1871	Patterson, Jas. Wilson, Esq. *Roseland, Waverley, Baltimore Co., U.S.A.*
1875	Patterson, Myles, Esq. 28, *Gloucester-place, Hyde-park, W.*
1876	*Patterson, Capt. Richd. R. *The Park, Nottingham.*
1876	2320 Patterson, Maj.-Gen. Wm. Thos. Laird. 6, *Spring-gardens, S.W.*
1863	Pattinson, J., Esq. 21, *Bread-street, E.C.*
1868	Paul, J. H., Esq., M.D. *The Terrace, Camberwell, S.E.*
1858	Paul, Joseph, Esq. *Ormonde-house, Ryde, Isle of Wight.*
1876	Pauli, Capt. W. B., R.N., H.M. Consul, *Porto Rico. Care of Messrs. Woodhead and Co.,* 44, *Charing-cross, S.W.*
1874	Paulson, W. H., Esq., B.A. *St. Lawrence-vicarage, Ramsgate.*
1872	Paxton, Robert Chas., Esq. 24, *Stafford-terrace, Phillimore-gardens, W.*
1877	Payne, Lieut.-Col. Geo. Massey. *East India United Service Club,* 14, *St. James's-square, S.W.*
1847	*Paynter, William, Esq., F.R.A.S. 21, *Belgrave-square, S.W. ; and Camborne-house, Richmond, Surrey.*

Year of Election.	
1853	Peacock, George, Esq. *Starcross, near Exeter.*
1876	2330 Pearcy, Joseph, Esq. 127, *Englefield-road, Islington, N.*
1863	Pearse, Captain R. B., R.N. 9, *Hyde-park-street, W.*
1877	Pearson, Arthur A., Esq. *Colonial-office, S.W.*
1874	Pechey, J. T. Primrose, Esq. *Leytonstone, Essex.*
1853	*Peckover, Alexander, Esq., F.L.S. *Wisbech.*
1875	*Peek, Cuthbert E., Esq. *Wimbledon-house, S.W.*
1860	*Peek, Sir Henry William, Bart., M.P. *Wimbledon-house, S.W.*
1872	*Peel, Captain Francis. *Boxted-house, Colchester.*
1858	Peel, Right Hon. Sir Robert, Bart., G.C.B., M.P. 4, *Whitehall-gardens, S.W.; and Drayton-manor, Tamworth.*
1874	*Pelham, Hon. Arthur L. *Stanmer, Lewes, Sussex.*
1875	2340 *Pelly, Colonel Sir Lewis, K.C.S.I. *Athenæum Club, Pall-mall, S.W.*
1875	Pelly, Capt. Richard W., R.N. *Trinity House, Tower-hill, E.C.; and Holmecroft, Walthamstow, E.*
1871	Pembroke, Right Hon. George R. C. Herbert, Earl of. *Wilton-house, Salisbury; and* 10, *Victoria-square, Pimlico, S.W.*
1875	Pender, Staff-Comm. D., R.N. *Admiralty, Whitehall; and Esquimalt, Thornton-hill, Wimbledon, S.W.*
1874	Pender, H. D., Esq. 18, *Arlington-street, S.W.*
1868	*Pender, John, Esq. 18, *Arlington-street, S.W.*
1863	*Pennant, Colonel S. S. Douglas. *Penrhyn-castle, Bangor.*
1859	*Penrhyn, Lord. *Penrhyn-castle, Bangor.*
1874	Pepys, Hon. Walter Courtenay. *Windham Club, St. James's-square, S.W.*
1860	Pereira, Francisco E., Esq. 93, *Chancery-lane, W.C.*
1865	2350 Perkins, William, Esq. *Rosario, Argentine Republic.*
1859	Perry, Sir Erskine, Member of the Council of India. 36, *Eaton-place, S.W.*
1865	Perry, Gerald R., Esq. *British Consulate, Stockholm.*
1862	*Perry, William, Esq. 9, *Warwick-road, Upper Clapton, N.E.*
1876	Petch, Richd., Esq. 16, *Westbourne-park, Hyde-park, W.*
1857	*Peters, William, Esq.
1860	*Petherick, John, Esq. *St. Goram Haven, St. Austell, Cornwall.*
1860	Petrie, Major Martin, 97th Regiment. *Hanover-lodge, Kensington-park, W.*
1871	Petter, G. Wm., Esq. *Streatham-grove, S.W.*
1866	Pharazyn, Robert, Esq. *Wellington, New Zealand. Care of Messrs. Scale and Rogers,* 9, *Fenchurch-street, E.C.*
1867	2360 Phayre, Lieut.-Gen. Sir Arthur, C.B., K.C.S.I. (Governor of Mauritius.) *Care of Messrs. H. S. King and Co.,* 45, *Pall-mall, S.W.; and E. India United Service Club, S.W.*
1862	*Phené, John Samuel, Esq., LL.D., F.S.A., F.G.S. 5, *Carlton-terrace, Oakley-street, S.W.*
1873	*Philbrick, Frederick Adolphus, Esq. 28, *Avenue-road, N.W.*
1860	Philip, George, Esq. 32, *Fleet-street, E.C.*
1872	Philipps, Herbert Rees, Esq. *India-office, S.W.*

Year of Election.	
1872	Philipps, Sutherland Rees-, Esq., M.D. 3, *Berkeley-place, Cheltenham.*
1857	Phillimore, R.-Admiral Augustus. *Shedfield, Fareham, Hants; and India United Service Club, S.W.*
1859	Phillimore, Charles Bagot, Esq. *Hurley Manor-house, Great Marlow; and India-office, S.W.*
1860	Phillimore, Capt. Wm. Brough (Grenadier Guards). 5, *John-street, Berkeley-square, W.*
1854	Phillips, Major-General Sir B. Travell, Knt. *United Service Club, S.W.*
1869	2370 Phillips, Edwd. Aug., Esq.
1873	Phillips, Geo. Esq., H.M.'s Consul, *Kiukiang. Care of Jno. Marsh, Esq.,* 29, *High-street, Maidstone.*
1877	Phillips, Thomas Ernest, Esq. *St. Mary's School, Seymour-street, Euston-square, N.W.*
1875	Phillips-Wolley, C. L., Esq. *Care of J. W. Sinclair, Esq.,* 2, *East India-avenue, E.C.*
1873	Philp, Capt. Fras. Lamb (Royal Scots Greys). *Salperton-park, near Cheltenham; Army and Navy Club, S.W.; and* 9, *Earl's-terrace, Kensington, W.*
1871	Philpott, Edward P., Esq., M.D., LL.D. *Poole, Dorsetshire.*
1878	Phipson-Wybrants, Temple Leighton, Esq., J.P. 14, *Portsea-place, Hyde-park, W.; and Dunlow, Moy, Co. Tyrone, Ireland.*
1872	*Pickering, John, Esq. 28, *Springfield-mount, Leeds.*
1871	Pickersgill, Wm. Cunliffe, Esq. 58, *Prince's-gate, S.W.*
1875	Pierce, John Timbrell, Esq. 3, *Middle Temple-lane, Temple; St. Albans, Herts; and Reform Club, S.W.*
1871	2380 Pierce, Josiah, Esq. 12, *Beaufort-gardens, Brompton-road, S.W.*
1870	Pigott, Robt. Turtle, Esq., D.C.L. *Manor-park, Lee, Kent; and* 36, *Southampton-street, Strand, W.C.*
1874	Pigott, Thomas Digby, Esq. *War-office, Pall-mall, S.W.*
1864	*Pigou, F. A. P., Esq. *Dartford, Kent.*
1852	*Pike, Captain John W., R.N. *United Service Club, S.W.*
1855	Pilkington, James, Esq. *Blackburn.*
1852	*Pim, Captain Bedford C. T., R.N., M.P. *Leaside, Kingswood-road, Upper Norwood, S.E.;* 2, *Crown-office-row, Temple, E.C.; and Senior and Junior United Service Clubs, S.W.*
1870	Pimblett, Rev. James. 26, *Great Avenham-street, Preston.*
1859	Pinney, Colonel William. 30, *Berkeley-square, W.*
1877	Pitcairn, Cecil Colvin, Esq., B.A. *New University Club, St. James's-street, S.W.*
1877	2390 Pitman, C. E., Esq. *Government Telegraph Department, Bengal.*
1872	Plaister, W. H., Esq., M.R.C.S., &c. *Tottenham, Middlesex.*
1871	Platt, Lieut.-Colonel Chas. Rowley. 4, *Bolton-street, Piccadilly, W.*
1865	Player, John, Esq. 22, *Carpenter-road, Edgbaston, Birmingham.*
1860	Playfair, Lieut.-Col. Robert Lambert. H.B.M. Consul-General, *Algiers. Care of Messrs. H. S. King and Co.,* 45, *Pall-mall, S.W.*
1866	Plowden, Charles C., Esq. *The Cottage, Chislehurst, Kent.*
1856	*Plowes, John Henry, Esq. 39, *York-terrace, Regent's-park, N.W.*

Year of Election.	
1875	*Plunkett, Capt. Geo. T., R.E. *Chatham. Care of Messrs. Cox and Co., Craig's-court, S. W.*
1875	Pohl, Franz Emil F. Hugo, Esq. *Maisonnette, Clapham-common, S. W.*
1873	Pollard, Henry Thos., Esq. 4 *Threadneedle-street, E.C.*
1855	2400 *Pollexfen, Captain J. J. *India.*
1866	*Pollington, John Horace, Viscount. 8, *John-street, Berkeley-square, W.*
1835	*Ponsonby, The Hon. Frederick G. B. 3, *Mount-street, Grosvenor-square, W*
1870	Poole, C. M., Esq., C.E. *Care of W. T. Poole, Esq., Carnarvon.*
1877	Poole, Capt. Wm. John E. (60th Royal Rifles). 9, *Granville-park, Lewisham, S.E.*
1857	Pope, Captain Wm. Agnew. *Union Club, Trafalgar-square, S. W.*
1863	*Porcher, Captain Edwin A., R.N. 60, *Chester-square, S. W.*
1874	*Porges, Theodore, Esq. 57, *Grosvenor-street, Grosvenor-square, W.; and Austin Friars, E.C.*
1871	*Portal, Wm. Richd., Esq., M.A. *Tonge-house, Lower Norwood, S.E.*
1877	Porter, Henry, Esq. 181, *Strand, W.C.*
1874	2410 Potter, Richard, Esq. *Standish-house, Stonehouse, Gloucestershire.*
1867	Potter, Wm. H., Esq. *Care of G. T. White, Esq., Kinrara, Tooting-common.*
1875	Pound, Alf. Jno., Esq., M.A. 3, *New-square, Lincoln's Inn, W.C.*
1861	*Pounden, Captain Lonsdale. *Junior United Service Club, S. W.; and Brownswood, Co. Wexford.*
1862	Povah, Rev. John V., M.A. 11, *Dawson-place, Pembridge-square, W.*
1864	*Powell, F. S., Esq. 1, *Cambridge-square, Hyde-park, W.*
1874	Power, Edward, Esq. 16, *Southwell-gardens, South Kensington, S. W.*
1859	Power, E. Rawdon, Esq. *Heywood-lodge, Tenby, South Wales; and Thatched-House Club, S. W.*
1868	Pownall, John Fish, Esq. 63, *Russell-square, W.C.*
1864	Powys, The Hon. Leopold. 16, *Queensbery-place, S.W.*
1870	2420 *Prance, Reginald H., Esq. *Frognal, Hampstead.*
1873	Preedy, Colonel H. William. *The Chantry, Fladbury, near Pershore, Worcestershire.*
1873	Prentice, Edward, Esq. *Care of Rev. H. Waller, The Rectory, Twywell-by-Thrapston, Northamptonshire.*
1873	*Prevost, Admiral J. C.
1868	Price, Charles S., Esq. *Bryn Derwen, Neath.*
1869	Price, F. G. H., Esq. 1, *Fleet-street, E.C.*
1869	Price, James, Esq. 8, *Howley-place, Maida-hill West.*
1852	Price, James Glenie, Esq. 14, *Clement's-inn, W.C.*
1873	Price, J. M., Esq., C.E.
1876	Price, Sir Rose Lambert, Bart. *Naval and Military Club, Piccadilly, W.*
1878	2430 Price, Thomas Phillips, Esq. 41, *Conduit-street, W.*
1877	Prichard, Edward Ellison, Esq. (Engineer for the Transkei Territory, S.A.). *Care of A. Prichard, Esq.,* 27, *Bedford-row, W.C.*
1860	*Prickett, Rev. Thomas William, M.A., F.S.A. 11, *Lypiatt-terrace, Cheltenham; and United University Club, Pall-mall East, S. W.*

1868 Prideaux, Colonel W. F., Bombay Staff Corps. *Care of Messrs. King and Co., 45, Pall-mall, S.W.*

1877 Prince, John, Esq. *Devonshire Club, St. James's-street, S.W.*

1873 Prince, John Sampson, Esq. 34, *Craven-hill-gardens, Hyde-park, W.*

1865 *Pringle, A., Esq. *Yair, Selkirk, N. B.*

1855 *Pringle, Thomas Young, Esq. *Reform Club, S.W.*

1866 *Prinsep, Edw. Aug., Esq., B.C.S., Commissioner of Settlements in the Punjaub, *Umritsur. Care of Messrs. H. S. King and Co.*, 65, *Cornhill, E.C.*

1868 Pritchard, Lieut.-Col. Gordon Douglas, R.E. 82, *Elsham-road, Addison-road, Kensington; and United Service Club, Pall-mall, S.W.*

1874 2440 Probyn, Maj.-General Sir Dighton Macnaughten, V.C., K.C.S.I., C.B. *Queen Anne's-mansions, St. James's-park, S.W.*

1874 Procter, Jno., Esq. *Cromwell-house, Long Preston, Leeds; and* 2, *Crown-office-row, Temple, E.C.*

1872 Proctor, Samuel, Esq. (Head Master, Borough Schools, San Fernando, Trinidad). *Care of E. H. Penney, Esq.*, 17, *Lime-street, E.C.*

1861 *Prodgers, Edwin, Esq. *The Rectory, Ayott St. Peter's, Herts.*

1874 Protheroe, Capt. Montague. *Care of Messrs. Grindlay and Co.*, 55, *Parliament-street, S.W.; and Junior United Service Club, S.W.*

1874 Protheroe, Pryse, Esq. *Gothic-cottage, Adelaide-road, Surbiton.*

1877 Prouse, Oswald Milton, Esq. *Westbourne-house, Shaftesbury-road, Hammersmith, W.*

1852 Prout, John William, Esq., M.A. *Athenæum Club, S.W.; and Neasdon, Middlesex, N.W.*

1874 Pryor, Rev. Jno. Eade. *Bennington-rectory, Stevenage, Herts.*

1878 Puckle, Major-General James. 9, *Charlotte-street, Brighton.*

1862 2450 *Puget, Lieut.-Colonel J. *Aldershot-park, Aldershot, Hants.*

1872 Puleston, John H., Esq. 2, *Palace-gate, Kensington, W.*

1860 Puller, Arthur Giles, Esq. *Athenæum Club, S.W.; Arthur's Club, S.W.; and Youngsbury, Ware.*

1876 Pullman, Henry, Esq. "*Normandy,*" *Kew-road, Richmond.*

1876 Pullman, Jno., Esq. *Grove-end, Chiswick.*

1872 Punsfer, Wm. B., Esq.

1857 Purcell, Edward, Esq., LL.D. *Whitchurch, Monmouth.*

1869 Purdon, Lieut. George Frederic, R.N.

1865 *Pusey, Sidney E. Bouverie, Esq.

1870 Pycroft, Sir Thomas, K.C.S.I. 17, *Cleveland-gardens, Hyde-park, W.*

1861 Quin, Lord George. 15, *Belgrave-square, S.W.*

1868 2460 Quin, John Thomas, Esq. *Care of Mr. Jno. B. Williams*, 36, *Hillmarten-road, Camden-road, N.*

Year of Election	
1871	Radcliffe, Sir Joseph P., Bart.
1858	*Radstock, Granville Augustus, Lord. 30, *Bryanston-square, W.*
1869	Rae, Edward, Esq. *Devonshire-road, Birkenhead.*
1876	Rae, Henry, Esq. 15, *Old-square, Lincoln's-inn, W.C.; and Oxford and Cambridge Club, Pall-mall, S.W.*
1862	*Rae, James, Esq. 32, *Phillimore-gardens, Kensington, W.*
1853	Rae, John, Esq., M.D., LL.D. 2, *Addison-gardens South, Holland-villas-road, Kensington, W.*
1876	Rae, John, Esq., F.S.A. 9, *Mincing-lane, E.C.*
1875	Rahles, Chevalier John. 103, *Camden-road, N.W.*
1870	2470 Raikes, Francis Wm., Esq. *Junior Carlton Club.*
1867	Raleigh, Rev. A., D.D. 27, *Ladbroke-grove, W.*
1871	Ralli, Eustratius, Esq. 93, *Lancaster-gate, W.*
1871	Ralli, Pandeli, Esq. 17, *Belgrave-square, S.W.*
1870	Ralston, W. R. Shedden, Esq., M.A. *British Museum, W.C.*
1873	Rambaut, John, Esq., M.D. *The Grange, Godstone, Surrey.*
1866	Ramsay, Alex., Esq. *Kilmorey-lodge, Castlebar, Ealing, W.*
1873	Ramsay, F. W. Hutchinson, Esq., M.D. 15, *Somerset-street, Portman-square, W.*
1867	Ramsay, John, Esq. *Islay, N.B.*
1875	Ramsay, Major John. *Straloch, Aberdeenshire.*
1867	*Ramsden, Richard, Esq., B.A. *Woldingfold, near Horsham.*
1869	2480 *Randell, Rev. Thomas, B.A. *Huish's School for Boys, Taunton.*
1878	Randolph, Vice-Admiral George G., C.B. 70, *Brunswick-place, Brighton; and United Service Club, Pall-mall, S.W.*
1874	Rankin, Capt. Fras. W. *Northwick-villa, Clifton, Gloucestershire; and Junior Naval and Military Club, Pall-mall, S.W.*
1868	Rankin, William, Esq. *Tiernaleague, Carndonagh, Donegal.*
1866	*Ransom, Edwin, Esq. *Kempstone, near Bedford.*
1876	Rapier, Richard C., Esq., C.E. 5, *Westminster-chambers, S.W.*
1869	Rassam, Hormuzd, Esq. *Nineveh-house, Spring-grove, Isleworth.*
1859	Ratcliff, Colonel Charles, F.S.A. *Athenæum Club, S.W.; Edgbaston, Birmingham; and Downing College, Cambridge.*
1861	Rate, Lachlan Macintosh, Esq. 9, *South Audley-street, W.*
1873	2490 Ravenscroft, W. H., Esq. *Care of Sir C. M'Grigor and Co.,* 25, *Charles-street, St. James's-square, S.W.*
1859	Ravenstein, Ernest G., Esq. *Alpha-cottage, Lorn-road, Brixton, S.W.*
1875	Rawlings, H. D., Esq. *Chalk-hill, Kingsbury, N.W.*
1875	Rawlins, Wm. Donaldson, Esq., M.A. 18, *Down-street, Mayfair, W.*
1861	Rawlinson, Sir Christopher. 61, *Lowndes-square, S.W.; and Aldingbourne-house, Chichester.*
1844	*Rawlinson, Major-General Sir Henry C., K.C.B., D.C.L., LL.D., F.R.S. *Athenæum Club, S.W.; and* 21, *Charles-street, Berkeley-square, W.*
1874	Rawson, Christopher, Esq. 9, *Victoria-chambers, Westminster, S.W.*

Year of Election.		
1876		Rawson, Philip, Esq. *Woodhurst, Crawley, Sussex.*
1838		Rawson, Sir Rawson Wm., K.C.M.G., C.B. *Drayton-house, West Drayton, Middlesex.*
1875		Rawson, Lieut. Wyatt, R.N. *Care of C. Rawson, Esq.*, 9, *Victoria-chambers, Westminster, S.W.*
1869	2500	Ray, Major Alfred William. *The Lodge, Brixton-oval, S.W.*
1872		Ray, George H., Esq., M.D. *Bengal. Care of Messrs. Grindlay and Co.*, 55, *Parliament-street, S.W.*
1874		*Rayleigh, Lord. *Terling-place, Witham, Essex.*
1873		Read, Frederick, Esq. 45, *Leinster-square, W.*
1874		Read, F. W. C., Esq. *Walthamstow.*
1877		Read, Gen. John Meredith (Minister of the U.S. in Greece). *Athens.*
1865		Redhead, R. Milne, Esq., F.L.S. *Springfield, Seedley, Manchester; Conservative Club, S.W.; and Junior Carlton Club, S.W.*
1868		*Redman, John B., Esq., C.E. 25, *Great George-street, S.W.*
1871		Reed, Andrew Holmes, Esq. *Earlsmead, Page-green, Tottenham.*
1877		Reed, John William, Esq. 27, *Clarence-street, Islington, N.*
1866	2510	*Rehden, George, Esq. 2, *Great Tower-street, E.C.*
1877		Reid, Alexander, Esq. *Georgetown, British Guiana. Care of the Colonial Bank, Bishopsgate-street, E.C.*
1861		*Reid, David, Esq.
1857		Reid, Lestock R., Esq. *Athenæum Club, S.W.; and* 122, *Westbourne-terrace, W.*
1861		Reilly, Anthony Adams, Esq.
1869		*Reiss, James, Esq. 7, *Cromwell-road-houses, South Kensington, S.W.*
1877		Remfry, Frederick Ernest, Esq. *Firsleigh, Torquay.*
1872		Remfry, Jno., Esq. *The Grange, Nightingale-lane, Clapham-common, S.W.*
1866		*Rennie, John Keith, Esq., M.A., Camb. 2, *Eccleston-square, S.W.*
1877		Rennie, John Thomson, Esq. 6, *East India-avenue, E.C.; and Deemount-house, Aberdeen.*
1834	2520	*Rennie, M. B., Esq., C.E. *Care of James Rennie, Esq.*, 9, *Motcomb-street, Belgrave-square, S.W.*
1864		Rennie, W., Esq. 6, *Great Cumberland-place, W.*
1877		Renshaw, Chas. B., Esq. *Elderslie, Renfrewshire, N. B.*
1830		*Renwick, General W. F., R.E. 18, *Cambridge-gardens, Kilburn, N.W.*
1861		Reuter, Julius, Baron de. *Kensington-palace-gardens, W.*
1858		Reynardson, Henry Birch, Esq. *Adwell, near Tetsworth, Oxfordshire.*
1872		Reynolds, William Henry, Esq. *Care of Messrs. King and Co.*, 65, *Cornhill, E.C.*
1867		Rhodes, Arthur John, Esq. *York-villa, London-road, St. Albans.*
1874		Rhodes, Hon. Wm. Barnard, Mem. Legis. Council, New Zealand. *Wellington, New Zealand. Care of Messrs. Jas. Morrison and Co.*, 4, *Fenchurch-street, E.C.*
1863		*Ricardo-Seaver, Major F. Ignacio. *Conservative Club, St. James's, S.W.*
1870	2530	Rice, Wm., Esq. *Apsley-end, Hemel Hempstead.*

Year Electio	
1868	Richards, Alfred, Esq. *Tewkesbury-lodge, Forest-hill.*
1874	Richards, Capt. F. W., R.N. *United Service Club; and H.M.S. 'Devastation,' Channel Squadron.*
1857	Richards, Admiral Sir George H., C.B., F.R.S. *Vancouver-house, Forest-hill, S.E.*
1877	Richards, M. W. Esq. *Shore-road, S. Hackney, E.*
1877	Richardson, Edwin J., Esq. 28, *Duke-street, Manchester-square, W.*
1864	Richardson, F., Esq. *Juniper-hall, Mickleham, Dorking.*
1873	Richardson, W. Brown, Esq. *Darlaston-rectory, Wednesbury, Staffordshire.*
1875	Rider, T. F., Esq. *The Grove, Clapham-road, S.W.*
1873	Riddell, Lieut. H. S. Hutton (2nd Battalion 60th Rifles). *Meerut.*
1876	2540 Rideal, John, Esq. *Devon-lodge, Mayow-road, Forest-hill.*
1877	Ridgway, John Ambrose, Esq. *Foundation School, Beverley.*
1864	Ridley, F. H., Esq.
1864	Ridley, George, Esq. 2, *Charles-street, Berkeley-square, W.*
1874	Ridpath, James Lionel, Esq. *Devon-lawn, Wimbledon-park.*
1875	Ridpath, Thomas Alex., Esq. 9, *Belsize-park, Hampstead.*
1862	*Rigby, Major-General Christopher Palmer. *Oriental Club, W.; and* 14, *Mansfield-street, W.*
1868	Riley, Captain Charles Henry. *Junior United Service Club, S.W.*
1860	Rintoul, Robert, Esq. *Windham Club, S.W.*
1853	Ripon, Most Hon. Geo. Fredk Sam., Marquis of, K.G., F.R.S. 1, *Carlton-gardens, S.W.; and Studley Royal, Ripon.*
1874	2550 Ritchie, Rev. George St. Martin (Chaplain to the Forces).
1877	Robarts, H. C., Esq. 41, *Lowndes-square, S.W.*
1876	Roberts, Rev. Chas. M. *The Grammar-school, Monmouth.*
1868	*Roberts, Charles W., Esq. *Penrith-house, Effra-road, Brixton, S.W.*
1861	Roberts, Capt. E. Wynne. 24, *Gloucester-place, Portman-square, W.; and Nutfield-lodge, Pouchen-end, Boxmoor, Herts.*
1875	Roberts, W. C., Esq. *New Zealand. Care of the Bank of New Zealand,* 50, *Old Broad-street, E.C.*
1874	Robertson, A. D., Esq. 53, *Queen's-gate, S.W.*
1865	Robertson, A. Stuart, Esq., M.D.
1860	Robertson, Sir D. Brooke, C.B., H.M. Consul-General, *Shanghae. Care of Messrs. H. S. King and Co.,* 65, *Cornhill, E.C.*
1875	Robertson, D. I. U., Esq. 174, *Chatham-street, Falkner-square, Liverpool.*
1861	2560 *Robertson, Graham Moore, Esq. 21, *Cleveland-square, Hyde-park, W.*
1877	*Robertson, Henry, Esq., M.D. 13, *Lancaster-gate, W.; and Pali-hall, Corwen, N. Wales.*
1870	*Robertson, James Nisbet, Esq. *Yewlands, Banstead, Surrey.*
1868	Robertson, Rev. J. S. S., M.A., F.R.A.S. *Duncrub-park, Dunning, Perthshire, N. B.*
1863	Robertson, R. B., Esq., H.M. Consul, *Yokohama, Japan.*
1873	Robertson, Major Wheatley. 35, *Queen's-gardens, W.*
1870	Robinson, Alfred, Esq. *Elm-bank, Huddersfield.*

Year of Election.	
1875	*Robinson, Arthur M., Esq. 32, *Devonshire-road, Claughton, Birkenhead.*
1873	Robinson, Capt. F. C. B., R.N. *Care of London Joint Stock Bank, Pall-mall, S.W.*
1872	Robinson, Henry, Esq., M.I.C.E., F.G.S. 7, *Westminster-chambers, S.W.*
1864	2570 Robinson, H. O., Esq. *Fairbank, Crystal Palace-park, S.E.*
1859	Robinson, Sir Hercules G. R., G.C.M.G., Governor of New South Wales. *Messrs. Burnett,* 17, *Surrey-street, W.C.*
1864	Robinson, John, Esq. *Care of E. Street, Esq.,* 30, *Cornhill, E.C.*
1874	Robinson, John, Esq., C.E. *Newick, Lewes.*
1865	Robinson, J. R., Esq., LL.D., F.S.A. Scot., F.G.S. Edin. *South-terrace, Dewsbury.*
1876	Robinson, J. T., Esq. 20, *Bloomsbury-square, W.C.*
1862	Robinson, Colonel Sir John Stephen, Bart. *Arthur's Club, S.W.; and* 20, *Park-lane, W.*
1860	Robinson, Mr. Serjeant (B.C.). 8, *King's-Bench-walk, Temple, E.C.; and* 43, *Mecklenburgh-square, W.C.*
1850	*Robinson, Captain Walter F., R.N. 15, *Montpellier-villas, Brighton.*
1872	Robinson, Wm., Esq., C.M.G. *Colonial-office, S.W.*
1870	2580 Robinson, Sir W. C. F., K.C.M.G., Governor of the Straits Settlements. *Care of Colonial-office, S.W.*
1858	Rochester, Right Rev. A. W. Thorold, Bishop of. *Athenæum Club, S.W.*
1830	*Rodd, James Rennell, Esq. 29, *Beaufort-gardens, S.W.*
1860	Roe, Capt. Hon. Jno. Septimus (Surveyor-General, W. Australia). *Care of Mrs Ellis Jervoise,* 7, *Euston-place, Leamington.*
1874	Rogers, Captain Ebenezer. *S.O.P., Chester.*
1877	Rogers, Edward C., Esq. *Three Counties Asylum, Stotfold, Baldock.*
1863	Rogers, John T., Esq. *River-hill, Sevenoaks.*
1874	Rogerson, Geo. Russell, Esq., F.R.A.S. *Beech-cottage, Calderstone-road, Allerton, near Liverpool.*
1861	Rollo, Lord. *Dumcrieff-castle, Moffat, N.B.*
1863	Rönn, M. Hermann von. *Ladbroke-lodge, Ladbroke-square, W.*
1866	2590 Rooke, Major W., R.A. *Formosa, Lymington, Hants.*
1871	Rooks, Geo. Arthur, Esq. 12, *Bloomsbury-square, W.C.*
1873	Rosa, Dr. Don Manuel Gonzalez de la, M.A.E. (Professor of Philosophy, University of San Marcos, Lima.) 80, *Guildford-street, Russell-sq., W.C.*
1868	Rose, Henry, Esq. 8, *Porchester-square, Hyde-park, W.*
1872	Rose, H. Cooper, Esq., M.D. *Hampstead, N.W.*
1861	Rose, Jas. Anderson, Esq. *Wandsworth, Surrey, S.W.; and* 11, *Salisbury-street, W.C.*
1870	Rose, The Right Hon. Sir John, Bart., K.C.M.G. 18, *Queen's-gate, Hyde-park, S.W.*
1857	*Rose, Colonel Sir Wm. Anderson, Alderman, F.R.S.L. *Carlton Club, S.W.;* 63, *Upper Thames-street, E.C.; and Upper Tooting, S.W.*
1876	Rosenthal, L., Esq. 10, *Delamere-terrace, N.W.*
1876	Ross, Lieut.-Col. E. C. *Care of Messrs. Grindlay and Co.,* 55, *Parliament-street, S.W.*

Year of Election.	
1870	2600 Ross, Capt. Geo. Ernest Augustus. *Forfar-house, Cromwell-road, South Kensington, S.W.*
1864	*Roundell, C. S., Esq. 16, *Curzon-street, Mayfair, W.*
1864	*Routh, E. J., Esq., M.A., F.R.S., F.R.A.S., &c. *St. Peter's College, Cambridge.*
1874	Routledge, Edmund, Esq. 40, *Clanricarde-gardens, Bayswater, W.*
1876	Routledge, Thomas, Esq. *Claxheugh, Sunderland.*
1872	*Row, A. V. Nursing, Esq. *Daba-garden, Vizagapatam, India. Care of Messrs. King and Co.*, 65, *Cornhill, E.C.*
1868	*Rowlands, Percy J., Esq. *India-office, S.W.*
1863	Rowley, Captain C., R.N. 33, *Cadogan-place, S.W.*
1876	Royse, Capt. E. C., R.N. 31, *Royal-avenue, S.W.*
1856	Rucker, J. Anthony, Esq. *Blackheath, S.E.*
1876	2610 Rudge, Wm. Newland, Esq. 17, *South Audley-street, W.; and Ethyl-lawn, Torquay, Devon.*
1874	Rumbold, Capt. H. E. W.
1861	*Rumbold, Charles James Augustus, Esq. 5, *Percival-terrace, Brighton.*
1861	Rumbold, Thomas Henry, Esq. 38, *Sussex-square, Brighton.*
1860	Rumley, Major-General Randal, 16, *Eaton-terrace, Eaton-square, S.W.*
1874	*Rusden, Geo. W., Esq. *Care of Messrs. Ashton and Co., Crown-court, Old Broad-street, E.C.*
1858	*Russell, Lord Arthur, M.P. 2, *Audley-square, W.*
1869	Russell, George, Esq., M.A. *Viewfield, Southfields, Wandsworth; and* 16, *Old Change, St. Paul's, E.C.*
1875	Russell, James H., Esq. *St. Mary's National Schools,* 4, *Kinglake-street, Edge-hill, Liverpool.*
1830	Russell, Right Hon. John, Earl, K.G., F.R.S. 37, *Chesham-place, S.W.; Pembroke-lodge, Richmond; Endsleigh-house, Devonshire; and Gart-house, near Callander, N. B.*
1875	2620 Russell, Peter N., Esq. 66, *Queensborough-terrace, Hyde-park, W.*
1875	*Russell, Robert, Esq. 42, *Albemarle-street, W.*
1875	Russell, Thomas, Esq. *Haremere-hall, Hurstgreen, Sussex.*
1876	Russell, Thomas, Esq. 22, *Kensington-palace-gardens, W.*
1860	Russell, Wm. Howard, Esq., LL.D. *Carlton Club, S.W.*
1876	*Rutherford, David Greig, Esq. *Surrey-house, Forest-hill.*
1860	Rutherford, John, Esq. 2, *Cavendish-place, Cavendish-square, W.*
1876	Rutson, Albert O., Esq. 7, *Half-Moon-street, W.*
1877	Rutson, John, Esq. *Newby Wiske, Thirsk, Yorkshire.*
1873	Ruxton, Captain W. Fitzherbert, R.N. 41, *Cornwall-gardens, S.W.*
1857	2630 *Ryder, Admiral Alfred P., H.M.S. 'Audacious,' China. *Care of Admiralty, S.W.*
1864	Ryder, G., Esq.
1868	Sabben, J. T., Esq., M.D. *Northumberland-house, Stoke Newington, N.*
1873	Sabel, Ernest E., Esq. 185, *Maida-vale, W.*

Year of Election.	
1852	Sabine, Lieut.-General Sir Edw., R.A., K.C.B., F.R.A.S., &c. 13, *Ashley-place, Victoria-street, Westminster, S. W.*
1875	Sadgrove, Arthur William, Esq. 64, *Mark-lane, E.C.; and Eltham, Kent.*
1874	St. Albans, His Grace The Duke of. *Bestwood-park, Arnold, Notts.*
1869	St. Clair, Alexander Bower, Esq., H.B.M. Consul, *Jassy, Moldavia.*
1873	St. Clair, John, Esq. *Newton Stewart, Wigtonshire.*
1874	St. Jean, Le Vicomte Ernest de Satgé. *Malvern Wells; and Junior Athenæum Club.*
1867	2640 St. John, Major Oliver Beauchamp Coventry, R.E. *Care of Messrs. H. S. King and Co.*, 65, *Cornhill, E.C.*
1862	St. John, Spenser, Esq., British Minister for Peru. *Care of J. A. St. John, Esq.*, 44, *St. John's-wood-terrace, St. John's-wood, N. W.*
1863	Sale, Captain M. T., R.E. *Chatham.*
1867	Salkeld, Colonel J. C. (H.M. Indian Forces). 29, *St. James's-street, S. W.*
1868	Salles, J de, Esq. 59, *Stanhope-gardens, South Kensington, S. W.*
1873	Salmon, Charles Spencer, Esq.
1869	*Salmond, Robert, Esq. *Reform Club, S. W.; and Rankinston, Patna, Ayr.*
1875	*Salomons, Sir David, Bart. *Broom-hill, Tunbridge Wells; and* 46, *Upper Berkeley-street, W.*
1863	*Salt, Henry, Esq. *Egremont, Bournemouth.*
1875	Salthouse, Rev. Robert. *St. James's-parsonage, West Derby.*
1861	2650 *Sandbach, Wm. Robertson, Esq. 10, *Prince's-gate, Hyde-park, S. W.*
1867	Sandeman, Captain David George. *The Ferns, Eldon-road, Kensington, W.*
1877	*Sandeman, Fleetwood, Esq. 15, *Hyde-park-gardens, W.*
1874	Sanderson, Rev. Edward. *The Vicarage, High Hurst Wood, Uckfield, Sussex.*
1877	Sandilands, John Alexander, Esq. 59, *Mark-lane, E.C.*
1862	Sanford, Lieut.-Colonel Henry Ayshford. 29, *Chester-street, Grosvenor-place, S. W.; and Nynehead-court, Wellington, Somerset.*
1870	Sanford, W. Ayshford, Esq., F.R.S. *Nynehead-court, Wellington, Somerset.*
1878	Sapp, John James, Esq. *Palmerston-road, Southsea.*
1860	Sarel, Colonel H. A., C.B., Assist.-Adj.-General S.E. District, *Dover; and United Service Club, Pall-mall, S. W.*
1869	Sarll, John, Esq. *Beauvoir-house, Hollington-park, St. Leonards-on-Sea.*
1860	2660 Sartoris, Alfred, Esq. *Abbottswood, Stow-on-the-Wold.*
1852	Saumarez, Rear-Admiral Thomas, C.B.. *The Firs, Jersey.*
1874	Saunders, Fras., Esq. 6, *Limes-grove, Lewisham, S.E.*
1874	Saunders, Howard, Esq. 7, *Radnor-place, Gloucester-square, W.*
1866	Saunders, James Ebenezer, Esq., F.L.S., F.G.S., F.R.A.S. 9, *Finsbury-circus; and Chelvistone*, 36, *Lee-terrace, Blackheath, S.E.*
1878	Savory, Major H. B. *Naval and Military Club, Piccadilly, W.*
1863	Sawyer, Colonel Charles (6th Dragoon Guards). 20, *Roland-gardens, S. W.*
1875	*Schäfer, Wm. Fredk., Esq. *Lydstep-house, Highgate, N.*
1874	Schalch, Vernon Rodolph, Esq. 20, *Milton-street, Dorset-square, N. W.*

Year of Election.	
1861	Schenley, Edward W. H., Esq. 14, *Prince's-gate, S.W.*
1874	2670 Scholfield, William F., Esq. 55, *Onslow-gardens, S.W.*
1878	Schön, Rev. James Frederick. *Palm-house, Chatham, Kent.*
1870	Scobell, Sandford Geo. T., Esq. *Down-house, Red Marley, Gloucester.*
1875	Sconce, Gideon C., Esq. 14, *St. James's-square, S.W.*
1872	Scott, Abraham, Esq. 12, *Farquhar-road, Upper Norwood, S.E.*
1866	Scott, Adam, Esq. 10, *Knatchbull-road, Camberwell.*
1866	Scott, Arthur, Esq. *Rotherfield-park, Alton, Hants; and Travellers' Club, S.W.*
1873	*Scott, Dugald, Esq. *The Moorlands, Kersal-edge, Manchester.*
1859	Scott, Lord Henry. 3, *Tilney-street, Park-lane, W.*
1861	*Scott, Hercules, Esq. *Brotherton, near Montrose, N. B.*
1877	2680 *Scott, James Benjamin, Esq. 32, *Coal Exchange, City, E.C.; and Walthamstow.*
1875	Scott, John Charles A., Esq. 6, *Cambridge-gate, Regent's-park, N.W.*
1877	Scott, Capt. P. A., R.N. *Care of W. T. Littlejohns, Esq., Royal Naval College, Greenwich, S.E.*
1877	Scrutton, Alexander, Esq, 2, *Upper St. John's-park, Blackheath, S.E.*
1863	Scovell, George, Esq. 25, *Grosvenor-place, S.W.*
1873	Searight, Hugh Ford, Esq. 7, *East India-avenue, E.C.*
1861	Searight, James, Esq. 80, *Lancaster-gate, W.*
1867	Seaton, Maj.-Gen. Lord. *D* 3, *Albany, W.*
1869	Sedgwick, Jno. Bell, Esq. 1, *St. Andrew's-place, Regent's-park, N.W.*
1878	Seebohm, Henry, Esq. *Rutlidge, Sheffield.*
1876	2690 Seeley, Harry G., Esq., F.L.S., F.G.S., &c. 61, *Adelaide-road, N.W.*
1877	*Seely, Charles, Esq., jun. 7, *Queen's-gate-gardens, South Kensington, S.W. and Sherwood-lodge, Nottinghamshire.*
1876	Segrave, Capt. W. F., H.M. Consul, *Stockholm. Care of the Librarian, Foreign-office, S.W.*
1858	*Serocold, Charles P., Esq. *Brewery, Liquorpond-street, E.C.*
1853	Sevin, Charles, Esq. 155, *Fenchurch-street, E.C.*
1875	Sewell, Henry, Esq. 10, *Upper Westbourne-terrace, W.*
1872	Sewell, Stephen A., Esq. *City Club, Old Broad-street, E.C.*
1867	Seymour, Alfred, Esq. 5, *Chesterfield-gardens, Mayfair, W.*
1872	*Seymour, Admiral F. Beauchamp, C.B. *Admiralty, Whitehall, S.W.*
1858	Seymour, George, Esq. 12, *Lower Phillimore-place, Kensington, W.*
1873	2700 *Seymour, Major-General W. H., C.B. *United Service Club, Pall-mall, S.W.*
1854	*Shadwell, Admiral Sir Charles F. A., K.C.B., F.R.S. *Meadow-bank, Melksham, Wilts.*
1860	*Shadwell, Lieut.-Colonel Lawrence.
1874	Shanks, Major Joseph G., R.M.L.I. *Plymouth, Devon.*
1856	*Share, Staff-Commander James Masters, R.N. *Seaview-terrace, Lipson-road, Plymouth.*
1873	*Sharp, Colin Kimber, Esq. 43, *Tregunter-road, West Brompton, S.W.*
1873	Sharp, Captain Cyril. 7, *Thurloe-square, S.W.*

Year of Election	
1868	Sharp, Henry T., Esq. 8, *Park-lane, Mayfair, W.*
1875	Sharp, Thos. Clark, Esq. 80, *Kensington-gardens-square, W.*
1861	*Sharpe, William John, Esq. 1, *Victoria-street, Westminster, S.W.; and Norwood, Surrey, S.E.*
1874	2710 Shaw, C. Bousfield, Esq. 26, *Charles-street, St. James's; and* 2, *Essex-court, Temple.*
1876	Shaw, Geo., Esq. 7, *Garrick-street, W.C.; and Oakwood-house, Rostrevor, Ireland.*
1862	*Shaw, John, Esq. *Finegand, Otago, New Zealand. Care of Messrs. Reith and Wilkie, Dunedin, Otago, N.Z. Per Messrs. Sampson Low and Co.,* 188, *Fleet-street, E.C.*
1861	Shaw, John Ralph, Esq. *Arrowe-park, Birkenhead.*
1870	*Shaw, Robert B., Esq. (British Joint Commissioner). *Ladak, Punjab, East Indies. Care of General Younghusband,* 106, *Pembroke-road, Clifton.*
1876	Shaw, W. Otho Nicholas, Esq. 35, *Queen's-gate, South Kensington, S.W.*
1870	*Shearme, Edward, Esq. 94, *Regent's-park-road, N.W.*
1875	Shelley, Edward, Esq. *Avington, Winchester.*
1868	*Shelley, Captain G. Ernest. 32, *Chesham-place, S.W.*
1867	Shenstone, Fredk. Smith, Esq. *Sutton-hall, Barcombe, Lewes.*
1875	2720 Shepheard, Chas. Edwd., Esq., C.E. *Beaumont-house, Ealing.*
1867	Shepherd, Chas. Wm., Esq., M.A., F.Z.S. *Trotterscliffe, Maidstone.*
1878	Shepherd, James, Esq. 19, *Lancaster-gate, W.*
1860	Sheridan, H. Brinsley, Esq., M.P. *New City Club, E.C.*
1863	Sheridan, Richard B., Esq. 39, *Grosvenor-place, S.W.*
1857	Sherrin, Joseph Samuel, Esq., LL.D., PH.D. *Leyton-house, Leyton-crescent, Kentish-town, N.W.*
1858	*Shipley, Conway M., Esq. *Twyford-moors, Winchester.*
1868	Shirley, Lionel H., Esq., C.E., &c. *Windham Club, S.W.; and* 9, *Queen's-gate-terrace, S.W.*
1871	*Shoolbred, James, Esq. 38, *Lancaster-gate, Hyde-park, W.*
1873	Short, Robert, Esq. 42, *Hillmarten-road, Camden-road, N.*
1872	2730 *Shuter, William, Esq. 66, *Belsize-park-gardens, Haverstock-hill, N.W.*
1876	*Sibley, George, Esq., C.E. *The Mount, Whitehill, Caterham, Surrey.*
1876	Sidney, Capt. Fred. W., R.N. 3, *Approach-road, Lower Norwood, S.E.*
1869	Silk, George Chas., Esq.
1871	*Sills, Wm. Bernard, Esq. 19, *Beaufort-gardens, S.W.*
1877	Siltzer, John, Esq. 4, *Cromwell-houses, South Kensington, S.W.*
1865	*Silva, Frederic, Esq. 97, *Westbourne-terrace, Hyde-park, W.*
1859	Silver, the Rev. Fred., M.A., F.R.A.S., F.G.S., F.L.S. *Rectory, Norton-in-Hales, Market Drayton, Salop.*
1859	*Silver, Stephen Wm., Esq. 66, *Cornhill, E.C.; and* 3, *York-gate, Regent's-park, N.W.*
1853	Simmons, Edw. R., Esq. *Nevill-house, Belgrave-terrace, Brighton.*
1848	2740 *Simmons, General Sir John L. A., R.E., K.C.B. 36, *Cornwall-gardens, Kensington, S.W.*

Year of Election		
1866		Simons, Henry M., Esq. *Tyersall-crescent, Wood-road, Sydenham-hill, S.E.*
1864		Simpson, Frank, Esq. 17, *Whitehall-place, S.W.*
1863		*Simpson, William, Esq. 64, *Lincoln's-inn-fields, W.C.*
1866		*Sims, Richard Proctor, Esq., C.E. *Malabar-hill, Bombay.*
1858		Skelmersdale, Right Hon. Edward, Lord. *Lathom-park, Ormskirk, Lancashire.*
1875		Skertchly, Joseph A., Esq. 189, *Glenarm-road, Clapton-park, E.*
1873		Skilbeck, Jno. Hy., Esq. *The Hollies, Snaresbrook, Leytonstone, E.*
1866		Skinner, John E. H., Esq. 3, *Dr. Johnson's-buildings, Temple, E.C.*
1863		Skrine, Henry D., Esq. *Warleigh-manor, near Bath.*
1871	2750	Slade, Henry, Esq., Fleet-Surgeon, R.N. *Army and Navy Club, S.W.; and Royal Western Yacht Club, Plymouth.*
1870		Sladen, Col. E. B. *Care of Messrs. Grindlay and Co.*, 55, *Parliament-street, S.W.*
1861		Sladen, Rev. Edward Henry Mainwaring. *The Gore, Bournemouth.*
1872		Smale, Sir John (Chief Justice, Hong-Kong). 26, *Kensington-square, W.*
1865		Smedley, Joseph V., Esq., M.A. *Oxford and Cambridge Club, S.W.*
1871		Smetham, John Osborne, Esq. *King's Lynn, Norfolk.*
1860		*Smith, Augustus Henry, Esq. *The Ridge, Bitterne, Southampton.*
1875		*Smith, B. Leigh, Esq., M.A. *Oxford and Cambridge Club, Pall-mall, S.W.*
1876		Smith, Bridgman, Esq. 27, *Lloyd-square, W.C.*
1871		Smith, Major C. B. Euan, C.S.I. 14, *St. James's-square, S.W. Care of Messrs. King and Co., Cornhill, E.C.*
1875	2760	Smith, David Murray, Esq. 20, *Oxford-street, Edinburgh.*
1859		Smith, Edward, Esq. *Windham Club, S.W.*
1877		Smith, E. Louis T., Esq. *Richmond-house, Hounslow.*
1873		Smith, F. Porter, Esq., M.B. *Shepton Mallet, Somersetshire.*
1871		Smith, Geo. Fereday, Esq., M.A., J.P., &c. *Grovehurst, Tunbridge Wells.*
1873		Smith, Griffiths, Esq. 7, *Endsleigh-street, Tavistock-square, W.C.*
1865		Smith, Guildford, Esq. 63, *Charing-cross, S.W.*
1861		Smith, Jervoise, Esq. 47, *Belgrave-square, S.W.*
1876		Smith, J. L. Clifford, Esq. 60, *Frithville-gardens, Shepherd's-bush, W.*
1861		*Smith, Joseph Travers, Esq. 25, *Throgmorton-street, E.C.*
1857	2770	Smith, Colonel Philip (Grenadier Guards). 6, *James-street, Buckingham-gate, S.W.*
1874		*Smith, R. Barr, Esq. *Torrens-park, Adelaide, S. Australia.*
1868		*Smith, Major Robert M., R.E. *Teheran.*
1874		Smith, Rupert, Esq. *Turner's-hill, near Dudley.*
1841		*Smith, Thomas, Esq.
1859		*Smith, W. Castle, Esq. 1, *Gloucester-terrace, Regent's-park, N.W.*
1859		Smith, Right Hon. William Henry, M.P. 1, *Hyde-park-street, W.*
1875		Smith, Wm. Hy., Esq. *Care of Messrs. Allan Bros., and Co., James-street, Liverpool.*
1875		Smith, William Howarth Glynn, Esq. 24, *Delamere-crescent, W.*

Year of Election.	
1857	*Smith-Bosanquet, Horace, Esq. 38, *Queen's-gate, South Kensington, S. W.*
1869	2780Smyth, Colonel Edmund. *Welwyn-grange, Herts.*
1869	*Smyth, Warington, Esq., F.R.S. 92, *Inverness-terrace, W.*
1850	*Smythe, Lieut.-General William J., R.A., F.R.S. *Athenæum Club, S.W.*
1872	Snooke, William, Esq. 20, *Northampton-park, Canonbury, N.*
1876	Solbé, Edward, Esq, *Palace-grove, Bromley.*
1865	*Solomons, Hon. George. *Jamaica.*
1839	*Somers, Right Hon. Charles, Earl. 49, *Prince's-gate, S. W.; Eastnor-castle, Herefordshire; and The Priory, Reigate, Surrey.*
1862	Somerset, Capt. Leveson E. H., R.N. *Care of Messrs. Chard,* 3, *Clifford's-inn, Fleet-street, E.C.*
1876	Somerville, Dr. Thomas, LL.D. *Hawthorn-hall, Wilmslow, Cheshire.*
1878	Soulsby, William Jameson, Esq. *Mansion-house, E.C.*
1860	2790Southesk, James Carnegie, Earl of, K.T. *Kinnaird Castle, Brechin, N. B.*
1860	*Southey, James Lowther, Esq. *Admiralty Transport-office, Drury-buildings, Liverpool.*
1872	Spalding, Captain H. (104th Regiment).
1865	Spalding, Samuel, Esq. *Thornleigh, Sydenham-hill, S.E.*
1870	Sparks, J. Hyde, Esq. *Conservative Club, S. W.*
1874	Sparrow, William, Esq. *Albrighton-hall, Shrewsbury.*
1873	Spence, Jas. Mudie, Esq. *Erlington-house, Whalley-range, Manchester.*
1873	Spence, Jno. Berger, Esq., F.G.S., &c. *Erlington-house, Whalley-range, Manchester.*
1870	Spencer, Admiral the Hon. J. W. S. 5, *Portman-street, W.*
1874	Spencer, Walter, Esq. 28, *Percy-street, W.; and Cavendish Club,* 307, *Regent-street, W.*
1878	2800Spice, Robert Paulson, Esq. 21, *Parliament-street, S. W.*
1867	Spicer, Edward, Esq. 19, *New Bridge-street, E.C.*
1874	Spicer, Jas., Esq. *The Harts, Woodford, Essex.*
1874	Spicer, Capt. Richard W. 3, *Chesham-place, Belgrave-square, S. W.*
1863	Spickernell, Dr. Geo. E., Principal of Eastman's Royal Naval Establishment, *Eastern-parade, Southsea.*
1855	*Spottiswoode, William, Esq., F.R.S. 41, *Grosvenor-place, S. W.*
1859	*Spratt, Rear-Admiral Thos. A. B., C.B., F.R.S. *Clare-lodge, Nevill-park, Tunbridge Wells, Kent.*
1866	Spruce, Richard, Esq., PH.D. *Coneysthorpe, Malton, Yorkshire.*
1871	Square, William, Esq., F.R.C.S. 22, *Portland-square, Plymouth.*
1853	Stanford, Edward, Esq. 55, *Charing-cross, S. W.*
1877	2810*Stanford, Edward, Esq., jun. 17, *Spring-gardens, S. W.*
1860	*Stanhope, Walter Spencer, Esq. *Cannon-hall, Barnsley, Yorkshire.*
1870	Stanley, Staff-Commander Henry, R.N. *Admiralty Survey, Melbourne; and Hydrographic-office, Admiralty, S. W.*
1872	*Stanley, Walmsley, Esq., C.E. *Albert-house, West End, Esher, Surrey.*

Year of Election.	
1869	Stanton, Charles Holbrow, Esq. 65, *Redcliffe-gardens, S.W.*
1875	*Stanton, Edwd. Wm., Esq., M.A. 5, *Verulam-buildings, Gray's-inn, W.C.*
1863	Stanton, George, Esq. *Coton-hill, Shrewsbury; and Conservative Club, S.W.*
1867	Stanton, Henry, Esq. 5, *Lansdowne-place, Holloway-road, N.*
1871	Stark, Wm. Emery, Esq. *Rydal-lodge, New-park-road, Brixton-hill.*
1870	Starling, Joseph, Esq. *Beresford-lodge, Dyke-road, Brighton.*
1868	2820 Staveley, Major-Gen. Sir Charles, K.C.B., Commander-in-chief, Bombay. *Care of Mr. H. Saunders,* 24, *Tichborne-street, W.; and United Service Club, S.W.*
1863	*Staveley, Miles, Esq. *Old Sleningford-hall, Ripon.*
1869	Stebbing, Edward Charles, Esq. *National Debt Office* 19, *Old Jewry, E.C.; and The Aspens, Sunbury.*
1867	Steel, Major J. P., R.E. *Simla. Care of the Oriental Bank,* 40, *Threadneedle-street, E.C.*
1868	Steel, William Strang, Esq. 65, *Lancaster-gate, Hyde-park, W.*
1876	Steele, James Dickson, Esq. *H.M. Female Convict Prison, Woking, Surrey.*
1871	Stein, Hon. Robert. *Port Louis, Mauritius. Care of Messrs. Hodgson, Stein, and Co.,* 22, *Basinghall-street, E.C.*
1870	Stenning, Charles, Esq. 3, *Upper Hamilton-terrace, N.W.*
1830	*Stephen, Sir George. *Melbourne. Care of Mr. H. W. Ravenscroft,* 15, *John-street, Bedford-row, W.C.*
1874	Stephens, Harold, Esq. *Finchley, N.W.*
1870	2830 *Stephens, Thomas Wall, Esq. 112, *Queen's-gate, South Kensington, S.W.*
1876	Stephenson, Jno. Hunter, Esq. 3, *Newman's-court, Cornhill, E.C.*
1857	Stephenson, Sir R. Macdonald, C.E. 72, *Lancaster-gate, W.; and East-cottage, Worthing.*
1866	Stepney, A. K. Cowell, Esq. 6, *St. George's-place, Knightsbridge, S.W.*
1877	Sterndale, Robert A., Esq.
1869	Steuart, Colonel T. R. (Bombay Army). *Esgair, Machynlleth, Wales.*
1874	Stevens, George Richard, Esq. *Kurraljeen, Hong Kong.*
1855	Stevens, Henry, Esq., F.S.A. 4, *Trafalgar-square, W.C.*
1877	*Stevenson, James, Esq. *Broomfield, Largs, N.B.*
1841	Stevenson, Thomas, Esq., F.S.A. *Iver Heath, Bucks.*
1874	2840 Steward, Major Edward H., R.E. *War-office, Whitehall, S.W.*
1869	Stewart, Major C. E. (Bengal Staff Corps). *Care of Sir Thos. Dyer,* K.C.B., 14, *Redcliffe-square, S.W.*
1874	Stewart, Gilbert McLeod, Esq. 1, *Westminster-chambers, S.W.*
1876	Stewart, H., Esq. 39, *Bruton-street, W.*
1871	*Stewart, Captain Herbert (3rd Dragoon Guards). *Staff-college, Farnboro'-station, Hants.*
1866	Stewart, Rev. Dr. James. *Lovedale, Alice, South Africa. Care of Robert Young, Esq., Offices of the Free Church of Scotland, Edinburgh.*
1860	*Stewart, Major J. H. M. Shaw (Royal Madras Engineers).
1874	Stewart, Robert, Esq. *Port Elizabeth, Cape of Good Hope. Care of the Standard Bank,* 10, *Clement's-lane, Lombard-street, E.C.*
1877	*Stewart, Robert, Esq. 49, *Holland-park, W.*

Year of Election.	
1873	Stewart, Admiral Sir Wm. Houston, K.C.B. 50, *Warwick-square, S.W., and Admiralty, S.W.*
1870	2850 Stilwell, Henry, Esq., M.D. *Moarcroft, Hillington, Uxbridge.*
1875	Stirling, Arthur F. G., Esq. *Oxford and Cambridge Club, S.W.*
1860	Stirling, Capt. Frederick H., R.N. *United Service Club, S.W.*
1875	*Stirling, J. Carolus, Esq. 9, *South Eaton-place, S.W.*
1863	Stirling, Sir Walter, Bart. 36, *Portman-square, W.*
1860	Stocker, John Palmer, Esq. 93, *Oxford-terrace, Hyde-park, W.*
1845	*Stokes, Vice-Admiral John Lort. *United Service Club, S.W.; and Scotchwell, Haverfordwest, Wales.*
1868	Stone, David H., Esq., Alderman. 7, *Bucklersbury, E.C.*
1874	Stone, Octavius, C., Esq. *Springfield, Nuneaton.*
1867	*Story, Edwin, Esq., M.A. 88, *Oldfield-road, Stoke Newington, N.*
1877	2860 *Stott, Rev. Samuel Walter, B.A. *York.*
1868	Stovin, Rev. Charles F. 59, *Warwick-square, S.W.*
1873	Stow, Geo. W., Esq. *Queen's Town, S. Africa.*
1866	Strachey, Major-General Richard, R.E., C.S.I., F.R.S. *Stowey-house, Clapham-common, S.W.; and India-office, S.W.*
1858	Stratford de Redcliffe, Right Hon. Stratford Canning, Viscount, K.G., G.C.B. 29, *Grosvenor-square, W.*
1864	Straton, Rev. N. D. J. *The Vicarage, Wakefield.*
1873	Straughton, Joseph, Esq. *Cockermouth, Cumberland.*
1875	Streeter, Alfred, Esq. 5, *Henwood-road, Rotherhithe, S.E.*
1877	*Streeter, Edwin William, Esq. *The Mount, Primrose-hill-road, N.W.; and Callis-court, St. Peter's, Kent.*
1860	Strickland, Edward, Esq., C.B., Commissary-General. *Care of Sir Chas. R. M'Grigor, Bart., and Co.,* 25, *Charles-street, St. James's-square, S.W.*
1868	2870 *Strode, Alf. Rowland Chetham, Esq. *Dunedin, Otago, New Zealand.*
1875	Strong, Alfred, Esq. 7, *Burlington-road, St. Stephen's-square, Bayswater, W.*
1853	Strousberg, Dr. Bethel Henry.
1874	Strousberg, Hy., Esq., jun.
1853	Strutt, George H., Esq., F.R.A.S. *Bridge-hill, Belper.*
1876	Stuart, Alexander, Esq. 8, *Powis-square, Kensington, W.*
1873	Stuart, Lieut.-Gen. Charles. 5, *Granville-place, Portman-square, W.*
1859	Stuart, Lieut.-Col. J. F. D. Crichton. 25, *Wilton-crescent, Belgrave-square, S.W.*
1875	*Stuart, James Meliss, Esq. *Oakenshaw, Upper Norwood.*
1866	Stuart, Major Robert. *Janina, Albania.*
1876	2880 *Stuart, Colonel S. William. 36, *Hill-street, W.*
1873	Sturgeon, Wentworth, Esq. *The Rockingham Clay-works, West Wellow, Romsey, Hants.*
1876	Sturman, Rev. M. C. T. 54, *Talfourd-road, Camberwell, S.E.*
1872	Sturt, Henry, Esq., jun. 119, *Holland-road, Kensington, W.*
1872	Styan, Arthur, Esq., F.S.A. 28, *Norfolk-crescent, Hyde-park, W.*

Year of Election.	
1864	Sudeley, Lord. 79, *Eccleston-square, S. W.*
1857	Sulivan, Rear-Admiral Sir Bartholomew J., R.N., K.C.B. *Bournemouth.*
1873	Sullivan, Sir Edwd., Bart. 18, *Grosvenor-place, S. W.*
1865	Sullivan, Captain T. W., R.N., C.B.
1869	*Summerhayes, William, Esq., M.D. *Crown-point, Ealing, W.*
1862	2890 Surridge, Rev. Henry Arthur Dillon, M.A. 21, *Berners-street, W.*
1862	Surtees, Colonel Charles Freville. *Chalcott-house, Long Ditton, Surrey.*
1873	Sutherland, Geo., Esq. *Arboretum-square, Derby.*
1861	*Sutherland, George Granville William, Duke of, K.G., F.R.S. *Stafford-house, St. James's-palace, S.W.*
1869	Sutherland, Robert, Esq. *Egham-rise, Surrey.*
1869	Sutherland, Thomas, Esq. 60, *Bedford-gardens, Campden-hill, Kensington, W.*
1874	Sutton, John Manners, Esq. *Kilham-hall, Newark, Notts.*
1873	Suzuki, Kinzo (Sec. of Japanese Leg.). 9, *Kensington-park-gardens, W.*
1875	2900 Swain, Edward, Esq. *Three Counties Asylum, Stotfold, Baldock.*
1876	Swaine, Capt. Leopold Victor. 14, *Queen's-gate, S. W.*
1875	Swann, Rev. P. F., M.A. *Braudsby, Easingwold, Yorkshire.*
1857	Swanzy, Andrew, Esq. *Sevenoaks, Kent.*
1875	Swart, Hon. N. J. R. *Pretoria, S. Africa; care of J. J. Pratt, Esq.*, 24, *Coleman-street, E.C.*
1862	*Swinburne, Commr. Sir John, Bart., R.N. *Capheaton, Newcastle-on-Tyne.*
1871	Syme, Henry, Esq. 60, *Palace-gardens-terrace, Campden-hill, W.*
1864	Symonds, F., Esq., M.D. *Beaumont-street, Oxford.*
1875	Symons, Rev. J. E., F.R.A.S. 40, *Hazlewood-crescent, Upper Westbourne-park, W.*
1852	*Synge, Colonel Millington H., R.E. *United Service Club, Pall-mall, S. W.*
1875	Szlumper, Jas. Weeks, Esq., C.E., F.G.S. *Aberystwyth.*

1852	Tagart, Courtenay, Esq. *Reform Club, Pall-mall, S. W.*
1859	2910 Tagart, Francis, Esq. 199, *Queen's-gate, S. W.; and Old Sneed-park, near Bristol.*
1866	Taintor, Edward C., Esq. PH. D. (Imperial Chinese Customs). *China. Care of J. D. Campbell, Esq.*, 8, *Storey's-gate, S. W.*
1857	*Tait, Robert, Esq. 14, *Queen Anne-street, W.*
1861	Talbot de Malahide, James Talbot, Lord, F.R.S. 15, *Chesterfield-street, May-fair, W.; Athenæum Club; and Malahide Castle, Co. Dublin.*
1877	Taubman, George Goldie, Esq. *Naval and Military Club, Piccadily, W.*
1861	Taylor, Commander A. Dundas, I.N. (Director of Marine Surveys), Calcutta. *Care of Messrs. H. S. King and Co.*, 65, *Cornhill, E.C.*
1873	Taylor, Charles, Esq. *Church-house-school, Ealing, W.*
1875	Taylor, C. A., Esq. *Boughton-place, Maidstone.*

Year of Election.	
1876	Taylor, Fras. Clement, Esq. *Summerleaze, East Harptree, near Bristol.*
1869	Taylor, George N., Esq. 3, *Clarendon-place, Hyde-park-gardens, W.*
1865	2920 Taylor, H. L., Esq. *Reform Club, S.W; and* 23, *Phillimore-gardens, Kensington, W.*
1873	Taylor, J. Banks, Esq. 25, *Austin-Friars, E.C.*
1865	Taylor, Rev. Jas. Hudson. 6, *Pyrland-road, Newington-green, N.*
1871	*Taylor, John, Esq. *The Rocks, Bath; and Booth-hall, Blackley, Lancashire.*
1863	Taylor, John, Esq. 110, *Fenchurch-street, E.C.*
1870	*Taylor, John Fenton, Esq. 20, *New-street, Spring-gardens, S.W.*
1867	*Taylor, John George, Esq., H.B.M. Consul in Kurdistan, Diarbekir.
1854	*Taylor, John Stopford, Esq., M.D. 2, *Millbank-terrace, Anfield-road, Liverpool.*
1863	Taylor, Lieut.-Gen. R. C. H., C.B. 16, *Eaton-place, S.W.; and Carlton Club, S.W.*
1864	Taylor, William Richard, Esq., Deputy-Commissary.
1873	2930 Teede, Chas., Esq. 12, *Granville-park, Blackheath, S.E.*
1875	Telfer, Commr. Buchan, R.N. 14, *Sumner-place, Onslow-square, S.W.*
1876	Temple, Lieut. Geo., R.N. *The Nash, near Worcester.*
1865	Temple, Sir Richard, K.C.S.I.
1877	Temple-West, Col. T.
1860	Templeton, John, Esq. 24, *Budge-row, E.C.*
1857	Tennant, Professor James. 149, *Strand, W.C.*
1873	Terashima, Munenori. 9, *Kensington-park-gardens, W.*
1872	Terrero, Maximo, Esq. 88, *Belsize-park-gardens, N.W.*
1830	*Thatcher, Colonel.
1874	2940 Thomas, Chas. Evan, Esq. 98, *Queen's-gate, S.W.*
1863	Thomas, G., Esq.
1872	Thomas, James Lewis, Esq., *War-office, Horse-Guards.* 26, *Gloucester-street, Warwick-square, S.W.; and Thatched-House Club, St. James's-street, S.W.*
1865	Thomas, John Henwood, Esq. *East India Dept., Custom-house, E.C.*
1864	Thomas, J. R., Esq., Staff Assist. Surg. *Castle-hill, Fishguard, Pembrokeshire.*
1874	Thomas, R. Gerard de V., Esq., M.A. *Eyhorne-house, Maidstone.*
1875	Thomas, Wesley Hy., Esq. *Care of W. Savage, Esq., Woodford-lodge, Woodford.*
1876	Thompson, Major H. (Bengal Staff Corps). *Care of Messrs. Grindlay and Co.,* 55, *Parliament-street, S.W.*
1869	*Thompson, Henry Yates, Esq. *The Windham Club, S.W.*
1874	Thompson, Thomas, Esq. *Durban, Natal, South Africa.*
1863	2950 Thomson, James, Esq. *Dunstable-house, Richmond.*
1868	Thomson, James Duncan, Esq., Portuguese Consul. *St. Peter's-chambers, Cornhill, E.C.*
1866	Thomson, John, Esq. 12, *Elgin-gardens, Effra-road, Brixton, S.W.*
1848	*Thomson, J. Turnbull, Esq., Chief Surveyor. *Wellington, New Zealand. Care of A. C. Thomson, Esq., Post Office Savings Bank, E.C.*

Year of Election.	
1861	*Thomson, Ronald Ferguson, Esq.
1865	Thomson, W. T., Esq.
1862	*Thorne, Augustus, Esq. *Belgrave-mansions, Grosvenor-gardens, S.W.*
1876	Thornhill, Capt. Jas. Alfred. *Bradbourne-villas, Bushey-hill, Camberwell.*
1867	Thornton, Edward, Esq., C.B. *Bank-house, Windsor.*
1847	Thornton, Rev. Thomas Cooke, M.A., M.R.I.A. *Brock-hall, near Weedon, Northamptonshire.*
1868	2960 Thorold, Alexander W. T. Grant, Esq. 3, *Grosvenor-gardens, S.W.*
1877	Thorpe, Geo., Esq. 20, *Eastcheap, E.C.*
1871	Thorpe, Wm. Geo., Esq., F.G.S. *Gloucester-house, Larkhall-rise, S.W.; and Barton's-house, Ipplepen, Newton Abbot, Devon.*
1877	Thring, Sir Henry, K.C.B. 18, *Queen Anne's-gate, S.W.*
1859	Thuillier, Maj.-Gen. H. L., C.S.I., F.R.S. (Surveyor-General of India). *Calcutta. Care of Messrs. Grindlay and Co.,* 55, *Parliament-street, S.W.*
1872	Thuillier, Capt. Henry R., R.E. *Care of Messrs. King and Co., Pall-mall, S.W.*
1865	*Thurburn, C. A., Esq. 16, *Kensington-park-gardens, Notting-hill, W.*
1861	Thurlow, The Right Hon. Lord. *Dunphail, Forres, N. B.*
1874	Thwaites, Capt. Joseph. 5, *Washington-terrace, Southampton.*
1877	Tietkins, W. H., Esq. (Government Surveyor, South Australia). *Care of G. Dovens, Esq., Avonside, Stratford sub-Castle, Salisbury.*
1874	2970 Tighe, Col. Fred. *The Priory, Christchurch, Hants; and Travellers' Club, S.W.*
1878	Timmins, Samuel, Esq., J.P., F.S.A., &c. *Elvetham-lodge, Birmingham.*
1872	Tinline, George, Esq. 17, *Prince's-square, Bayswater, W.*
1874	*Tinné, J. Ernest, Esq. *Briarley, Aigburth, near Liverpool.*
1839	*Tinné, John A., Esq. *Briarley, Aigburth, near Liverpool.*
1873	Tipping, George B., Esq. *Coombe-lodge, Kingston-hill, Surrey.*
1876	Tizard, Staff-Commander J. H., R.N. *Hydrographic-office, Admiralty, S.W.*
1877	Todd, Arthur, Esq. 52, *St. Augustine's-road, Camden-square, N.W.*
1862	Todd, John, Esq. *Aukland-lodge, Blackheath, S.E.*
1865	Todd, Rev. John W., D.D. *Tudor-hall, Forest-hill, Sydenham, S.E.*
1876	2980 Tollemache, Hon. Hamilton. 8, *St. James's-square, S.W.*
1853	*Tomlin, George Taddy, Esq., F.S.A. *Combe-house, Bartonfields, Canterbury.*
1877	Tomlin, John Hewitt, Esq. *Wesley-terrace, Bramley, Leeds.*
1853	Tomline, George, Esq. 1, *Carlton-house-terrace, S.W.*
1873	Tomlinson, John, Esq. *Overton, Ruabon.*
1875	Tomlinson, Walter, Esq., B.A. 3, *Richmond-terrace, Whitehall, S.W.*
1877	*Tomlinson, W. E. M., Esq., M.A. 3, *Richmond-terrace, Whitehall, S.W.; and Athenæum Club, S.W.*
1856	Torrance, John, Esq. 5, *Chester-place, Hyde-park-square, W.*
1866	Torrens, Sir Robert Richard, K.C.M.G. 12, *Chester-place, W.; and The Cott, Holm, near Ashburton, South Devon.*
1877	*Torry, Lieut. Harold J. B. *Hanover-square Club, W.*

Year of Election.	
1875	2990 Townshend, Capt. F. French (2nd Life Guards). **Arthur's Club, St. James's-street, S. W.*
1859	Townshend, Capt. John, R.N. 2, *Fernside-villas, New Wandsworth.*
1846	*Towry, George Edward, Esq.
1873	Towse, John Wrench, Esq. *Fishmongers'-hall, London-bridge, E.C.*
1858	Towson, J. Thomas, Esq. 47, *Upper Parliament-street, Liverpool.*
1864	*Toynbee, Capt. Henry. 12, *Upper Westbourne-terrace, W.*
1863	*Tozer, Rev. H. F., M.A. *Exeter College, Oxford.*
1863	*Travers, Arch., Esq. 28A, *Addison-road, Kensington, W.*
1876	Travers, Lieut.-Gen. James, V.C. *Care of Messrs. King and Co.*, 65, *Cornhill, E.C.*
1859	Tremlett, Rev. Francis W., M.A., D.C.L., PH.D. *Belsize-park, Hampstead, N.W.*
1865	3000 *Trench, Major the Hon. Le Poer, R.E. 3, *Hyde-park-gardens, W.; and Ordnance Survey-office, Pimlico, S.W.*
1863	Trestrail, Rev. Frederick. *St. John's-road, Newport, Isle of Wight.*
1872	Treuenfeld, Richard von F., Esq. 12, *Queen Anne's-gate, Westminster, S. W.*
1862	Trevelyan, Sir Charles Edward, Bart. K.C.B. 8, *Grosvenor-crescent, S. W.*
1830	Trevelyan, Sir Walter Calverly, Bart., M.A., F.S.A., F.L.S., F.R.S.N.A., &c. *Athenæum Club, S. W.; Wallington, Northumberland; and Nettlecombe, Somerset.*
1864	Trimmer, Edmund, Esq. 41, *Botolph-lane, E.C.*
1875	Trinder, Hy. Wm., Esq. 135, *Harley-street, W.*
1867	Tritton, Joseph Herbert, Esq. 54, *Lombard-street, E.C.*
1871	Trivett, Captain John Fredk., R.N.R. *The Homestead, Hackney-common, N.E.*
1878	Trollope, Anthony, Esq. 39, *Montague-square, W.C.*
1876	3010 *Trotter, Coutts, Esq. *Athenæum Club, Pall-mall, S.W.*
1869	Trotter, Capt. Henry, R.E. *Care of Messrs. Richardson and Co.*, 23, *Cornhill, E.C.*
1872	Trotter, Captain J. Moubray. * *Naval and Military Club, Piccadilly, W.*
1874	*Trotter, William, Esq. 11, *Hertford-street, Mayfair, W.*
1870	Trutch, J. W., Esq., C.M.G. *British Columbia. Care of Bank of British Columbia*, 5, *East India-avenue, Leadenhall-street, E.C.*
1867	Tryon, Captain George, R.N., C.B. 5, *Eaton-place, S. W.; and Army and Navy Club, S. W.*
1862	Tuckett, Francis Fox, Esq. *Frenchay, near Bristol.*
1865	Tuckett, Philip D., Esq. *Southwood-lawn, Highgate, N.*
1852	Tudor, Edward Owen, Esq., F.S.A. 1, *Portugal-street, Grosvenor-square, W.*
1857	Tudor, Henry, Esq. 12, *Portland-place, W.*
1876	3020 Tufnell, Wm., Esq. 6, *Eaton-square, S.W.; and Hatfield-place, Hatfield-Peveral.*
1864	Turnbull, George, Esq., C.E., F.R.A.S. *Rosehill, Abbots Langley, Herts.*
1878	*Turnbull, Walter, Esq. *The Avenue, Gipsy-hill, Upper Norwood.*
1873	Turner, Hon. George.
1870	Turner, Lieut.-General Henry Blois (Bomb. Eng.). 131, *Harley-street, W.*
1874	Turner, H. G., Esq. (Madras Civil Service). 14, *St. James's-square, S. W.*

Year of Election.	
1874	Turner, Jos. Edward, Esq. 80, *King-street, Cheapside, E.C.*
1863	Turner, Thomas, Esq. 36, *Harley-street, W.*
1867	Tweedie, Captain Michael, R.A. 31, *Victoria-road, Charlton.*
1864	*Twentyman, A. C., Esq. *Castlecroft, near Wolverhampton.*
1863	3030 Twentyman, William H., Esq. *Ravensworth, St. John's-wood-park, N.W.*
1849	Twiss, Sir Travers, D.C.L., F.R.S. 8, *Paper-buildings, Temple, E.C.*
1874	Twite, Charles, Esq. *Castle-house, St. Agnes, Scorrier, Cornwall.*
1858	Twyford, Captain A. W., 21st Hussars. *Governor, County Prison, Bury St. Edmunds, Suffolk.*
1865	Tyer, Edward, Esq., C.E., F.R.A.S. 32, *Russell-square, W.C.*
1862	*Tyler, George, Esq. 24, *Holloway-place, Holloway-road, N.*
1873	Tyler, W. James, Esq. 15, *Bromley-common, Kent.*
1859	Tytler, Colonel W. Fraser. *Aldowrie, Inverness.*
1876	Ullyett, Henry, Esq. *Dover-road, Folkestone.*
1862	Underhill, Edward Bean, Esq., LL.D. *Derwent-lodge, Thurlow-road, Hampstead, N.W.*
1868	3040 Unwin, Howard, Esq., C.E. *Oxford-court*, 109A, *Cannon-street, E.C.*
1877	*Vacher, E. P., Esq. *Oak-hill, Surbiton.*
1844	*Vacher, George, Esq. *Oak-hill, Surbiton.*
1872	*Vallentin, James R., Esq. 55, *Cow-cross, E.C.*
1874	Valentine, William J., Esq. *Homedale-house, Gypsy-hill, Upper Norwood; and* 18, *Cornhill, E.C.*
1878	Van Campen, Samuel Richard, Esq. 79, *Gloucester-street, Warwick-square, S.W.*
1862	*Vander Byl, P. G., Esq. 126, *Harley-street, W.*
1865	Vane, G., Esq. *Ceylon. Messrs. Price and Boustead, Craven-street, Strand, W.C.*
1876	Vanrenen, Lieut.-Col. Adrian Deneys (Bengal Staff Corps). 24, *Lansdowne-road, Notting-hill, W.*
1875	Vans-Agnew, Robert, Esq., M.P. *Carlton Club, S.W.; and Barnbarrock, Wigtonshire, N. B.*
1856	3050 *Vaughan, James, Esq., F.R.C.S. *Builth, Breconshire.*
1852	*Vavasour, Sir Henry M., Bart. 8, *Upper Grosvenor-street, W.*
1855	Vavasseur, James, Esq. *Knockholt, near Sevenoaks, Kent.*
1871	Vereker, Lieut.-Col. the Hon. Charles Smyth. *Junior United Service Club, S.W.*
1863	*Vereker, The Hon. H. P., LL.D., H.M. Consul at Charante. 1, *Portman square, W.*

Year of Election.	
1862	Verner, Edward Wingfield, Esq., M.P. *The Aske, Bray, Ireland.*
1862	*Verney, Commr. Edmond H., R.N. *Rhianva, Bangor, North Wales.*
1837	*Verney, Sir Harry C., Bart., F.R.A.S. *Travellers' Club, S.W.; and Claydon-house, Bucks.*
1852	Verulam, Right Hon. James Walter, Earl of. *Gorhambury, near St. Albans; Barry-hill, Surrey; and Messing-hall, Essex.*
1874	*Vincent, Capt. Chas. (late I.N.). 23, *Cornwall-road, Westbourne-park, W.*
1857	3060 Vincent, John, Esq. 2, *Ulster-terrace, Regent's-park, N.W.*
1865	*Vincent, M. C., Esq., Professor of Economic Geology and Metallurgy; Inspector of Mines, &c. *Cincinnati, U. S.; and* 127, *Strand, W.C.*
1871	Vine, Staff-Comm. Wm. W., R.N. *Care of Messrs. Hallett and Co., St. Martin's-place, W.*
1858	Vines, William Reynolds, Esq., F.R.A.S. *Care of Sydney H. Vines, Esq., Christ's College, Cambridge.*
1874	Viney, Rev. Josiah. *Fernwood, Highgate, N.*
1872	Vivian, Hon. H. Crespigny. *Foreign-office, S.W.*
1863	Vivian, Major Quintus. 17, *Chesham-street, Belgrave-square, S.W.*
1876	Vivian, Capt. Ralph. 24, *Grosvenor-street, W.*
1876	Vyse, Griffin William, Esq. 21, *Stanley-crescent, Kensington-park, W.*
1863	*Vyvyan, Sir Richard Rawlinson, Bart., F.R.S. *Trelowarren, Cornwall.*
1863	3070 Wade, R. B., Esq. 13, *Seymour-street, Portman-square, W.*
1863	Wade, Sir Thos. F., K.C.B., H.B.M. Minister Plenipotentiary, Envoy Extraordinary, and Superintendent of Trade. *Peking, China. Care of R. B. Wade, Esq.,* 13, *Seymour-street, Portman-square, W.*
1877	*Wadham, Edward, Esq., J.P. *Milwood Dalton, Lancashire.*
1873	*Wagner, Henry, Esq., M.A. 13, *Half-Moon-street, Piccadilly, W.*
1853	*Wagstaff, William Racster, Baron, M.D., M.A.
1876	Wainwright, Chas. Jas., Esq. *Merion-house,* 162, *Highbury-new-park; and* 251, *High Holborn, W.C.*
1869	Waite, Charles, Esq., LL.D.
1867	*Waite, Rev. John.
1871	Wakley, Thos. Finsbury Septimus, Esq., C.E. *College-terrace, Guernsey.*
1874	Walburn, Edmund, Esq., M.A., Principal of Grosvenor College. 366, *Brixton-road, S.W.*
1876	3080 Wale, Rev. Burlington B. 10, *Southbrook-road, Burnt-ash-lane, Lee, S.E.*
1873	*Walford, Lionel N., Esq. 66, *Lowndes-square, S. W.*
1874	Walkem, Hon. Geo. Anthony. *British Columbia.*
1870	*Walker, Albert, Esq. *Auckland Club, New Zealand.*
1875	Walker, Capt. Arthur Campbell (Royal Body Guard). *Army and Navy Club, Pall-mall.*
1862	Walker, Major-General C. P. Beauchamp, C.B. 97, *Onslow-square, S.W.; and United Service Club, S.W.*

Year of Election.		
1861		Walker, Edward Henry, Esq., H.M. Consul at Cagliari. _Care of Messrs. Drummond, Charing-cross._
1863		*Walker, Frederick John, Esq. _The Priory, Bathwick, Bath._
1872		Walker, Capt. J. Campbell (Madras Staff Corps). _Care of Messrs. Grindlay and Co.,_ 55, _Parliament-street, S. W._
1859		*Walker, Colonel James T., F.R.S., Royal Engineers. Supt. Gt. Trig. Survey of India. _Dehra Doon, India. Care of Messrs. H. S. King and Co.,_ 65, _Cornhill, E.C._
1873	3090	Walker, John, Esq. 351, _Brixton-road, S. W._
1861		*Walker, John, Esq.
1858		*Walker, Captain John (H.M.'s 66th Foot). _Broom-hill, Colchester._
1871		*Walker, Capt. J. B. _East Bank, Oxton, Birkenhead; and Old Calabar, near Bonny, West Africa._
1864		Walker, R. B. N., Esq. _Care of Mr. Blissett,_ 38, _South Castle-street, Liverpool._
1874		Walker, Robert, Esq. 39, _Lombard-street, E.C._
1861		Walker, Rev. William. _School-house, Reading._
1866		Walker, William, Esq., F.S.A. 48, _Hilldrop-road, Tufnell-park, N._
1874		Walker, W. Fredk., Esq. _Moore-park-villas, Walham-green, S. W._
1868		Walkinshaw, William, Esq. _Hartley-grange, Winchfield, Hants._
1854	3100	*Wallace, Alfred Russell, Esq. _Waldron-edge, Duppas-hill, Croydon._
1861		Wallace, Rev. Charles Hill, M.A. 3, _Harley-place, Clifton, Bristol._
1864		Waller, Rev. Horace. _The Rectory, Twywell-by-Thrapston, Northamptonshire._
1863		Wallich, George C., Esq., M.D. 162, _Holland-road, Kensington, W._
1872		*Wallroth, Chas. Henry, Esq. _Woodclyffe, Chislehurst._
1874		Walls, William, Esq. 2, _Belhaven-terrace, Glasgow._
1876		Walpole, Lieut. Robert Horace, R.N. _Rainthorpe, near Norwich; and_ 4, _Dean-street, Park-lane, W._
1863		Walpole, Rt. Hon. Spencer, M.P., F.R.S. 109, _Eaton-square, S. W._
1878		Walrond, Sir J. W., Bart. 17, _Cavendish-square, W._
1853		Walter, Henry Fraser, Esq. _Papplewick-hall, near Nottingham._
1873	3110	*Waltham, Edward, Esq. _Watcombe-house, Stockwell-green, S. W._
1863		Walton, J. W., Esq. 41, _Great Marlborough-street, W._
1864		Walton, R. G., Esq., C.E. _Bombay._
1877		Ward, Charles, Esq. _Pietermaritzburg, Natal._
1876		*Ward, Christopher, Esq. _Saville-place, Halifax._
1874		Ward, Edwin, Esq., F.Z.S. 49, _Wigmore-street, W._
1853		*Ward, George, Esq.
1874		Ward, Jno., Esq. _Lenox-vale, Belfast. Care of J. A. Rose, Esq.,_ 11, _Salisbury-street, Strand, W.C._
1868		Ward, Captain the Hon. Wm. John, R.N., A.D.C. 44, _Charing-cross, S. W._
1869		Ward, William Robert, Esq. _Capesthorne-on-Avon, Christchurch._
1875	3120	Warden, Edmund M., Esq. _Wyberlye, Burgess-hill, Sussex._
1862		Wardlaw, John, Esq. 44, _Prince's-gardens, Hyde-park, S. W._
1876		Warner, Rev. Geo. Townsend. _Newton-college, S. Devon._

Year of Election.	
1877	*Warner, J. H. B., Esq. *Quorn-hall, Loughborough; and Conservative Club, S.W.*
1876	Warrand, Colonel W. E., R.E. *Aldershot.*
1859	Warre, Arthur B., Esq. 109, *Onslow-square, S.W.*
1872	Warre, Rev. Edmond, M.A. *Eton College.*
1869	Warre, Lieut.-General H. J., C.B. 35, *Cadogan-place, S.W.*
1874	Warren, Capt. Charles, R.E. *Midhurst.*
1869	Warren, Charles, Esq. 17, *Hanover-street, Peckham, S.E.*
1862	3130 Warren, Major Richard Pelham. *Worting-house, Basingstoke.*
1876	*Waterfield, O. C., Esq. *Temple-grove, East Sheen.*
1867	Waterhouse, George Marsden, Esq. *Care of Messrs. Morrison and Co.*, 4, *Fenchurch-street, E.C.*
1874	*Waterhouse, Capt. Jas., Bombay Staff Corps (Assistant Surveyor-General of India). *Surveyor-General's-office, Calcutta. Care of Messrs. Trübner and Co.*, 59, *Ludgate-hill, E.C.*
1875	Waters, J. H. Ernest, Esq. *Care of Messrs. Robinson and Waters*, 34, *Bishopsgate-street, E.C.*
1874	Waters, T., Esq., Surveyor-General to the Japanese Government.
1874	Watherstone, Rev. Jno. Dundas. *The Lecturer's House, Monmouth.*
1862	Watney, John, Esq. 34, *Clement's-lane, Lombard-street, E.C.*
1875	Watson, Lieut. Chas. Moore, R.E. 25, *Fitzwilliam-place, Dublin.*
1859	Watson, James, Esq. 24, *Endsleigh-street, W.C.*
1860	3140 Watson, James, Esq. *Langley-house, Langley, Bucks.*
1874	Watson, Sir James. 9, *Woodside-terrace, Glasgow.*
1876	Watson, Jno. Gibson, Esq. 20, *Clanricarde-gardens, Hyde-park, W.*
1861	Watson, John Harrison, Esq. 28, *Queensborough-terrace, Kensington-gardens, W.*
1875	Watson, Lieut. Joseph, R.N.R. 22, *Bancroft-road, Mile-end-road, E.*
1872	Watson, Robert, Esq. *Falcott-house, North-hill, Highgate, N.*
1867	Watson, Robert Spence, Esq. *Moss Croft, Gateshead-on-Tyne.*
1870	Watson, Thos., Esq., Portuguese Vice-Consul, Cape Town. *Care of J. R. Thomson and Co., St. Peter's-chambers, E.C.*
1868	Watson, Wm. Bryce, Esq. 5, *Lime-street-square, E.C.; and* 29, *Duke-street, St. James's, S. W.*
1876	Watson, Wm. Livingstone, Esq. 34, *Leadenhall-street, E.C.; and Oriental Club.*
1871	3150 Watt, Robert, Esq., C.E. *Ashley-avenue, Belfast.*
1877	Watts, Rev. Arthur. *Training College, Durham.*
1872	Watts, H. Cecil, Esq. *Lindfield-house, Lindfield, Surrey.*
1872	Watts, John, Esq. *Norton-court, near Gloucester.*
1874	Waugh, Fras. Gledstanes, Esq., M.A. *Oxford and Cambridge Club, Pall-mall, S.W.*
1867	Waveney, Lord, F.R.S., &c. 7, *Audley-square, W.; and Flixton-hall, Harleston.*
1874	Wayte, Rev. Wm., M.A. 2, *Cambridge-terrace, Regent's-park, N.W.*
1868	Webb, Edward B., Esq., C.E. 6A, *Victoria-street, Westminster, S.W.*
1872	Webb, Geo. P., Esq. *Junior Athenæum Club, Piccadilly, W.*

Year of Election.	
1877	Webb, Captain H. G., 36th Regt. *Norton-barracks, Worcester; and Army and Navy Club, S.W.*
1876	3160 Webb, J. C., Esq., M.D. 14, *Lower Belgrave-street, S.W.*
1875	Webb, Locock, Esq., Q.C. 1, *Hanover-terrace, Notting-hill, W.*
1858	*Webb, Capt. Sydney. *Riversdale, Twickenham.*
1862	*Webb, William Frederick, Esq. *Newstead Abbey, Notts; and Army and Navy Club, S.W.*
1836	*Webber-Smith, General James. *Care of Major Webber-Smith, 6, Inverness-gardens, Kensington, S.W.*
1865	Webster, Alphonsus, Esq. 44, *Mecklenburgh-square, W.C.*
1866	Webster, George, Esq. 40, *Finsbury-circus, E.C.*
1874	Webster, James Hume, Esq. 14, *Chapel-street, Park-lane, W.*
1874	Wedd, George, Esq. 51, *Queen's-gardens, Hyde-park, S.W.*
1875	Weedow, Joseph, Esq. *Darnhall Grammar-school, Winsford, Cheshire.*
1860	3170 Weguelin, Thomas Matthias, Esq., M.P. *Care of the Peninsular and Oriental Steam Navigation Co., Leadenhall-street, E.C.*
1872	Weise, Jno., Esq. 103, *St. George's-road, Pimlico, S.W.*
1874	Weiss, Foveaux, Esq. 33, *Chester-terrace, Regent's-park, N.W.*
1878	Weiss, Hubert Foveaux, Esq. 33, *Chester-terrace, Regent's-park, N.W.*
1851	Weller, Edward, Esq. 34, *Red-lion-square, W.C.*
1873	Wellings, Henry, Esq. 44, *Thistle-grove, South Kensington, S.W.*
1853	*Wellington, Arthur Richard, Duke of, Major-General, K.G., D.C.L. *Apsley-house, W.; and Strathfieldsaye, Hampshire.*
1870	*Wells, Arthur, Esq. *Nottingham.*
1872	Wells, J. C., Esq. *Southborough, Bickley, Kent.*
1864	Wells, Sir Mordaunt, late Chief Puisne Judge, Bengal. 104, *Belgrave-road, S.W.*
1862	3180 Wells, William, Esq. 22, *Bruton-street, W.; and Redleaf, Penshurst, Kent.*
1863	Welman, Charles, Esq. *Norton-manor, Taunton.*
1870	West, Raymond, Esq. (Bomb. Civ. Service).
1873	West, William Nowell, Esq. 30, *Montagu-street, Russell-square, W.C.*
1872	Westendarp, Charles H., Esq. 19, *Stanley-crescent, Kensington, W.*
1873	Western, W. T., Esq. 11, *Montague-villas, Richmond.*
1875	Westgarth, Wm., Esq. 10, *Bolton-gardens, South Kensington, S.W.*
1863	*Westlake, John, Esq. 16, *Oxford-square, W.*
1853	Westmacott, Arthur, Esq. *Athenæum Club, S.W.*
1874	Westmacott, E. Vesey, Esq.
1852	3190 Weston, Alex. Anderdon, Esq., M.A. 74, *Queen's-gate, S.W.*
1862	Westwood, John, Esq. 24, *Coleman-street, E.C.*
1830	*Weyland, John, Esq., F.R.S. *Woodrising-hall, Norfolk.*
1878	Whalley, Daniel, Esq. 62, *Threadneedle-street, E.C.*
1866	Wharncliffe, Right Hon. The Earl of. 15, *Curzon-street, W.*
1861	Wharton, Rev. J. C. *Junior Athenæum Club, Piccadilly, W.*
1874	Wharton, Robert, Esq. *Hurley, Great Marlow, Bucks.*
1876	*Wharton, Commr. Wm. Jas. Lloyd, R.N. *H.M.S. 'Fawn.'*

Year of Election.	
1858	Wheatley, G. W., Esq. 156, *Leadenhall-street, E.C.*
1869	Whichelow, Rev. James Shearer. 41, *Arundel-square, Barnsbury, N.*
1853	3200*Whinfield, Edward Wrey, Esq., B.A. *Severn-grange, Worcester.*
1839	*Whishaw, James, Esq., F.S.A. 32, *Harewood-square, N.W.*
1867	Whitaker, Thomas Stephen, Esq. *Everthorpe-hall, East Yorkshire; and Conservative Club, S.W.*
1868	Whitby, Rev. Thomas, M.A., &c. *Christ Church-vicarage, Plymouth.*
1875	White, Arthur, Esq. *The Cedars, Hammersmith-road, W.*
1857	White, Arthur D., Esq., M.D. 56, *Chancery-lane, W.C.*
1865	White, Lieut. Arthur Wellesley, R.A. *Drake's Island, Plymouth.*
1873	White, Francis W., Esq. *Hankow, China. Care of H. C. Batchelor, Esq.,* 110, *Cannon-street, E.C.*
1878	White, Rev. G. Cosby. *Newland, near Malvern.*
1875	White, Geo. F., Esq. 1, *Porchester-gate, Hyde-park, W.*
1857	3210White, Henry, Esq., F.S.A., J.P. 96, *Queen's-gate, Hyde-park, S.W.; and The Lodge, Hillingdon-heath, near Uxbridge.*
1878	White, Rev. J. Edward. *St. Paul's Vicarage, Chatham.*
1862	White, Jas. Thos., Esq. 4, *Clarendon-place, Hyde-park, S.W.*
1874	White, Owen, W., Esq. *Piersfield, South Streatham.*
1869	White, Robert Owen, Esq. *The Priory, Lewisham, S.E.*
1866	White, W. A., Esq., H.M. Consul, Dantzic. *Care of G. C. Rowland, Esq., Librarian's Dept., Foreign-office, S.W.*
1863	*White, William O., Esq. 10, *Lime-st., E.C.; and Barnsfield, near Dartford, Kent.*
1873	*Whitehead, Chas., Esq., F.S.A. *Barming-house, Maidstone.*
1874	Whitehead, Colonel F. George. 84, *Portland-place, W.*
1862	Whitehouse, William Matthew Mills, Esq. 46, *Chepstow-place, Bayswater, W.; and Hardwicke-house, Studley, Warwickshire.*
1873	3220Whitford, John, Esq. *Care of Messrs, Sinclair, Hamilton and Co.,* 17, *St. Helen's-place, E.C.; and Alfred-street, Liverpool.*
1874	Whitmee, Rev. S. J. 5, *Dacre-park, Blackheath.*
1878	Whittingham, W. B., Esq. *North View, The Drive, Walthamstow; and* 91, *Gracechurch-street, E.C.*
1865	Whymper, Edward, Esq. *Town-house, Haslemere.*
1875	Whyte, Jas., Esq.
1869	Whytt, Ebenezer, Esq. *The Grove, Highgate, N.*
1873	Whytt, P. Falconer, Esq. *The Grove, Highgate, N.*
1878	Wickenden, Geo. Thos., Esq., F.Z.S. 5, *Cornwall-residences, York-gate, N.W.; and Hanover-square Club, W.*
1871	*Wiggins, Joseph, Esq. 4, *The Elms, Sunderland.*
1870	Wilder, Frederick, Esq. *Purley-hall, Reading.*
1867	3230Wilkins, J. E., Esq. 4, *Paper-buildings, Inner Temple, E.C.*
1860	*Wilkinson, Major A. Eastfield, R.A. *Oudh Commission, India; 7, Cavendish-place, Brighton; and Army and Navy Club, S.W.*
1854	Wilkinson, Frederick E., Esq., M.D. *Sydenham Kent, S.E.*

Year of Election
1865 Wilkinson, Dr. G. 4, *St. John's-wood-villas, St. John's-wood, N. W.*
1875 Wilkinson, Capt. J. Fenwick. *Care of Geo. Tuson, Esq., Ilchester, Somerset.*
1865 Wilkinson, J. J., Esq. 3, *Victoria-street, Westminster, S. W.*
1874 Wilkinson, Joseph, Esq. *York.*
1878 Wilkinson, Col. Josiah. *Highgate, N.*
1872 *Willans, John Anderson, Esq. 6, *Vincent-square, Westminster, S. W.*
1878 Willans, William Henry, Esq. 23, *Holland-park, W.*
1857 3240 Willcock, J. W., Esq., Q.C. 6, *Stone-buildings, Lincoln's-inn, W.C.; and Rosenstead, Avenue-road, St. John's-wood, N. W.*
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Martin Stewart, Rossall School (Bronze Medal).

Educational Prize :—

Mr. Thomas Richard Clarke—the sum of Five Pounds—for successful competition in Geography at the Society of Arts examination.

1871.—**Sir Roderick I. Murchison,** Bart.—Founder's Medal—in recognition of the eminent services he has rendered to Geography during his long connection with the Society.

A. Keith Johnston, LL.D.—Patron's Medal—for his long-continued and successful services in advancing Geography, and especially for his merit in carrying out his scheme of Physical Atlases.

SCHOOLS' PRIZE MEDALS:—

Political Geography.—GEO. HOGBEN, University School, Nottingham (Gold Medal).

RICHD. NAYLOR ARKLE, Liverpool College (Bronze Medal).

Physical Geography.—DANIEL MCALISTER, Liverpool Institute (Gold Medal).

WM. GERSHOM COLLINGWOOD, Liverpool College (Bronze Medal).

EDUCATIONAL PRIZE:—

Mr. JOHN ARMSTRONG—the sum of Five Pounds—for successful competition in Geography at the Society of Arts examination.

1872.—**Colonel Henry Yule,** C.B.—Founder's Medal—for the eminent services he has rendered to Geography in the publication of his three great works, 'A Mission to the Court of Ava,' 'Cathay, and the Way Thither,' and 'Marco Polo.'

Mr. Robert Berkeley Shaw—Patron's Medal—for his Journeys in Eastern Turkistan, and for his extensive series of Astronomical and Hypsometrical Observations, which have enabled us to fix the longitude of Yarkand, and have given us, for the first time, the basis of a new delineation of the countries between Leh and Kashgar.

Lieut. G. C. MUSTERS, R.N.—a Gold Watch—for his adventurous Journey in Patagonia, through 960 miles of latitude, of which 780 were previously unknown to Europeans.

KARL MAUCH—the sum of Twenty-five Pounds in acknowledgment of the zeal and ability with which he has devoted himself, for a series of years, to the Exploration of South-Eastern Africa.

SCHOOLS' PRIZE MEDALS:—

Physical Geography.—S. E. SPRING RICE, Eton College (Gold Medal).

A. S. BUTLER, Liverpool College (Bronze Medal).

Political Geography.—W. G. COLLINGWOOD, Liverpool College (Gold Medal).

W. C. GRAHAM, Eton College (Bronze Medal).

EDUCATIONAL PRIZE:—

Mr. GEO. M. THOMAS—the sum of Five Pounds—for successful competition in Geography at the Society of Arts Examination.

1873.—**Mr. Ney Elias**—Founder's Medal—for his survey of the Yellow River of China, in 1868; and for his recent journey through Western Mongolia.

Mr. H. M. Stanley—Patron's Medal—for his discovery and relief of Dr. Livingstone.

Mr. THOMAS BAINES—a Gold Watch—for his long-continued services to Geography, and especially for his journeys in South-Western and South-Eastern Africa.

Captain CARLSEN—a Gold Watch—for his discoveries in the Arctic Seas, and for having circumnavigated the Spitzbergen as well as the Nova Zembla groups.

SCHOOLS' PRIZE MEDALS:—

Physical Geography.—W. C. HUDSON, Liverpool College (Gold Medal).

W. A. FORBES, Winchester College (Bronze Medal).

Political Geography.—S. E. SPRING RICE, Eton College (Gold Medal).

A. T. NUTT, University College School (Bronze Medal).

1874.—**Dr. Georg Schweinfurth**—Founder's Medal—for his discovery of the Uelle River, beyond the South-western limits of the Nile basin; and for his admirable work, 'The Heart of Africa,' in which he has recorded the results of his travels.

Colonel P. Egerton Warburton—Patron's Medal—for his journey across the previously unknown Western Interior of Australia; from Alice Springs, on the line of overland telegraph, to the West Coast near De Grey River.

SCHOOLS' PRIZE MEDALS:—

Physical Geography.—LOUIS WESTON, City of London School (Gold Medal).

FRANCIS CHARLES MONTAGUE, University College School (Bronze Medal).

Political Geography.—WILLIAM HARRY TURTON, Clifton College, Bristol (Gold Medal).

LIONEL JACOB, City of London School (Bronze Medal).

1875.—**Lieut. Weyprecht**—Founder's Medal—for his explorations and discoveries in the Arctic Sea between Spitzbergen and Nova Zembla.

Lieut. Julius Payer—Patron's Medal—for his journey and discoveries along the coast of Franz-Josef's Land, between Spitzbergen and Nova Zembla.

W. H. JOHNSON—Gold Watch—for services rendered to Geography while engaged in the Great Trigonometrical Survey of India among the Himalayas.

SCHOOLS' PRIZE MEDALS:—

Physical Geography.—HENRY ALEXANDER MIERS, Eton College (Gold Medal).

ARCHIBALD EDWARD GARROD, Marlborough College (Bronze Medal).

Political Geography.—SIDNEY H. B. SAUNDERS, Dulwich College (Gold Medal).

WM. C. GRAHAM, Eton College (Bronze Medal).

1876.—**Lieut. V. Lovett Cameron**, R.N.—Founder's Medal—for his journey across Africa from Zanzibar to Benguela, and his survey of the Southern half of Lake Tanganyika.

Mr. John Forrest—Patron's Medal—in recognition of the services to Geographical Science rendered by his numerous successful explorations in Western Australia, and especially for his admirably executed route-survey across the interior from Murchison River to the line of Overland Electric Telegraph.

SCHOOLS' PRIZE MEDALS:—

Physical Geography.—JOHN WILKIE, Liverpool College (Gold Medal).

WALTER NEW, Dulwich College (Bronze Medal).

Political Geography.—THOMAS KNOX, Haileybury College (Gold Medal).

W. M. H. MILNER, Marlborough College (Bronze Medal).

CAMBRIDGE LOCAL EXAMINATIONS PRIZE MEDAL:—

F. H. GLANVILL, Devon County School (Silver Medal).

OXFORD LOCAL EXAMINATIONS PRIZE MEDALS:—

JOHN WILKIE, Liverpool College (Silver Medal).

H. M. WARD, Bridgnorth Grammar School (Bronze Medal).

1877.—**Captain Sir George S. Nares**, R.N., K.C.B.—Founder's Medal—for having commanded the Arctic Expedition of 1875–6, during which the ships and sledge-parties respectively reached a higher Northern latitude than had previously been attained, and a survey was accomplished of 300 miles of coast-line, facing a previously unknown Polar Sea; also for his Geographical services in command of the *Challenger* Expedition.

The Pundit Nain Singh—Patron's Medal—for his great journeys and surveys in Tibet and along the Upper Brahmaputra, during which he determined the position of Lhása, and added largely to our positive knowledge of the Map of Asia.

Captain A. H. MARKHAM, R.N.—a Gold Watch—for having commanded the Northern Division of sledges in the Arctic Expedition of 1875–6, and for having planted the Union Jack in 83° 20′ 26″ N., a higher latitude than had been reached by any previous Expedition.

SCHOOLS' PRIZE MEDALS:—

Physical Geography.—WALTER NEW, Dulwich College (Gold Medal).

ARTHUR SMYTH FLOWER, Winchester College (Bronze Medal).

Political Geography.—WILLIAM JOHN NEWTON, Liverpool College (Gold Medal).

JOHN WILKIE, Liverpool College (Bronze Medal).

CAMBRIDGE LOCAL EXAMINATIONS PRIZE MEDALS:—

H. C. TEMPLE, Brighton Grammar School (Silver Medal for Physical Geography, and Silver Medal for Political Geography).

OXFORD LOCAL EXAMINATIONS PRIZE MEDALS:—

JOHN EDWARD LLOYD, Chatham Institute, Liverpool (Silver Medal).

JAMES EDWIN FORTY, City Middle-Class School (Bronze Medal).

PRESENTATION

OF THE

ROYAL AND OTHER AWARDS.

(*At the Anniversary Meeting, May 28th,* 1877.)

ROYAL MEDALS.

THE FOUNDER'S MEDAL was awarded to Captain SIR GEORGE S. NARES, R.N., K.C.B., for having commanded the Arctic Expedition of 1875–6, during which the ships and sledge-parties respectively reached a higher Northern latitude than had previously been attained, and a survey was accomplished of 300 miles of coast-line, facing a previously unknown Polar Sea; also for his Geographical services in command of the *Challenger* Expedition. The VICTORIA or PATRON'S MEDAL to the Pundit Nain Singh, for his great journeys and Surveys in Tibet and along the Upper Brahmaputra, during which he has determined the position of Lhása, and added largely to our positive knowledge of the map of Asia.

Addressing first Captain Sir George Nares, the PRESIDENT spoke as follows:—

"Sir GEORGE NARES,

"In delivering to you the Founder's Medal of the Royal Geographical Society, the highest honour it is in their power to bestow, I am discharging one of the most agreeable duties of the President of this Society. I will only add that its primary object, which is to encourage Geographical Science and Discovery, does not exclude a just appreciation of the many high qualities displayed in your conduct of the Arctic Expedition, and without which the results attained could never have been secured. The discoveries which you, and the officers and men under your command, made of advanced Polar lands, were due to the energy, perseverance and endurance manifested by all, under hardships and difficulties of the gravest character. But especially do the records now before the world show the bold and skilful manner in which the ships of the Expedition were conducted, the leading vessel to the highest latitude yet attained, and probably possible of attainment by keel, and their safe return home from the hazards of ice-navigation of no ordinary character, even for Arctic Seas, with all appliances intact, and without accident to vessels or crews.

"With regard to the additions to our Geographical knowledge made by you, they cannot be better described than in the official language of the Lords Commissioners of the Admiralty when conveying their approval to you of the conduct of all engaged in the important service, which is as follows:—

"'Notwithstanding, however, that it was found impossible for the sledging parties to attain a much higher latitude than that reached by Sir Edward Parry, the addition to geographical knowledge has been considerable. The conjectural open sea to the north of Smith Sound, and the land assumed to be there, have been proved not to exist. The coast line of the northernmost land yet known, adjoining the American continent, has been accurately charted for 220 miles. The north coast of Greenland has been examined for 80 miles, and traced as far as Cape Britannia in lat. 82° 54′ N., long. 48° 38′ W. The western shores of Smith's Sound have been corrected in detail; and, lastly, the question of the possibility of reaching the Pole by way of Smith Sound has been set at rest, whilst a higher latitude than any hitherto attained, viz. 83° 20′ 26″, has been reached.'"

SIR GEORGE NARES replied:—

"Mr. PRESIDENT and Gentlemen:—It is with much pride that I receive this gift, and I accept it as a token that the work I have performed has obtained the approval of so distinguished and leading a body as the Royal Geographical Society. The bestowal of such a highly wished-for honour is of itself one of the highest rewards I could possibly ever have foreseen for my work, and it entails considerable responsibility for the future; for if, hitherto, I have done my utmost to advance our knowledge of the Globe we inhabit, so, hereafter, it will be my endeavour to bear worthily the very high distinction which has now been conferred upon me."

Colonel H. Yule, C.B., then came forward to receive the Medal on behalf of the Pundit Nain Singh. The PRESIDENT addressed him as follows:—

"Colonel Yule,

"Since Nain Singh's absence from this country precludes my having the pleasure of handing to him in person, this, the Victoria or Patron's Medal, which has been awarded to him for his great journeys and surveys in Tibet and along the Upper Brahmaputra, during which he determined the positions of Lhása, and added largely to our positive knowledge of the map of Asia, I beg to place it in your charge for transmission to the Pundit.

"I will myself address a letter to the Viceroy in India calling his attention to this award of one of the two Medals of the year, the highest honour this Society can confer on any Geographer, however distinguished by his services to Geographical Science or Discovery, and with a request that His Excellency will take such steps as he may deem best for its presentation to Nain Singh.

"But, in the mean time, I would beg you, who were the first to propose that this Medal should be so conferred, and took such generous and earnest interest in the recognition by the Society of Nain Singh's high claims to that distinction, to convey to him from me, as the President of the Royal Geographical Society, the satisfaction the Council have felt in thus publicly marking their high appreciation of the noble qualities of loyalty, courage and endurance, by the display of which in no ordinary degree he achieved success, and was enabled to add so largely to our knowledge of that portion of Asia which no European could explore. I would ask you also to add that the Council have not failed to see that he has not worked as a mere topographical automaton; and were perfectly aware that, notwithstanding he was a native of Asia and familiar with Tibetan dialects, his journeys were not accomplished without great peril to life. I would finally wish you to convey to Nain Singh, who in the performance of these distinguished services has suffered seriously in health by the extreme hardships attending his journeys, that I trust this public recognition of his merits as a Geographer from the Royal Geographical Society, which in its awards knows no distinction of nationality, race or creed, will be a source of satisfaction to him in his retirement, of which nothing can ever deprive him, to the end of a life he has devoted so faithfully to the public service and the advancement of Geographical knowledge."

Colonel Yule, in reply, said:—"I was taken by surprise when I was asked to officiate on this occasion as the recipient of the Medal for Nain Singh. The man who, beyond all others, ought to have occupied the position is Colonel Montgomerie, and I am sure that nothing but ill-health could have caused that gentleman to be absent on an occasion so interesting to him. Not only had Colonel Montgomerie given Nain Singh the most essential part of his training, but he was himself one of the most distinguished Himalayan explorers and surveyors, and had spent a considerable portion of his life at an altitude of 18,000 feet above the sea. I am utterly unknown to Nain Singh, and I shall therefore, by the leave of the Society, communicate the intimation of his having been assigned the Medal through Colonel Montgomerie. But though I do not know Nain Singh personally, I know his work, and can affirm that what the President has said about him is very just. He is not a topographical automaton, or merely one of a great multitude of native employés with an average qualification. His observations have added a larger amount of important knowledge to the map of Asia than those of any other living man, and his journals form an exceedingly interesting book of travels. It will afford me great pleasure to take steps for the transmission of the Medal through an official channel to the Pundit."

A Gold Watch, with an appropriate Inscription, was also presented to Captain A. H. Markham, R.N., for having commanded the Northern Division of sledges in the Arctic Expedition of 1875–6, and for having planted the Union Jack in 83° 20′ 26″ N., a higher latitude than had ever before been reached by any previous Expedition.

In delivering the Watch, the PRESIDENT said:—

"Captain MARKHAM, I have much pleasure in presenting to you, in the name of the Royal Geographical Society, this Watch, in public recognition of their appreciation of the valuable services you rendered in command of the Northern Division of Sledges in the Arctic Expedition of 1875–6, in the course of which you reached the latitude of 83° 20′ 26″ N., the highest that had been attained by any previous Expedition."

Captain MARKHAM replied:—

"Mr. President and Gentlemen:—I have to express my grateful thanks for the high honour conferred upon me. Though I have been selected as the recipient of the more substantial part of the honour, I know it will be felt and appreciated by my companions, without whom I should not have been placed in the position I now occupy. I cannot help thinking also, that apart from my having planted the Union Jack in the highest Northern latitude yet reached, I have been selected for this honour because I was the senior officer of the extended sledging parties of the Expedition, and that it is an acknowledgment on the part of the Royal Geographical Society of the geographical services which those parties rendered."

PUBLIC SCHOOLS' PRIZE MEDALS.*

The following was the award of the Examiners for the present year:—

PHYSICAL GEOGRAPHY. *Gold Medal.*—Walter New, Dulwich College. *Bronze Medal.*—Arthur Smyth Flower, Winchester College. *Honourably Mentioned.*—John Chisman, City of London School; J. A. Robinson, Liverpool College; Frank Stanton Carey, Bristol Grammar School.

POLITICAL GEOGRAPHY. *Gold Medal.*—William John Newton, Liverpool College. *Bronze Medal.*—John Wilkie, Liverpool College. *Honourably Mentioned.*—Arthur Reed Ropes, City of London School; William Wallis Ord, Dulwich College; Samuel Fowler Blackwell, Clifton College; George Arnold Tomkinson, Haileybury College; Henry Colthurst Godwin, Clifton College.

Mr. FRANCIS GALTON said it gave him much pleasure, on this as on many previous occasions, to be able to assure the Society of the public appreciation of the Examinations. Nearly all of the more important schools had at one time or another sent candidates. Eton had won no less than 5 out of the 36 Medals that had hitherto been adjudged, and 11 other schools had each contributed one or more names to the list of Medallists. There were at present only two important schools which had never sent a candidate, Harrow and Rugby. Many testimonies had been borne to the great service rendered to the cause of Education by these prizes. In a communication to the Conference of Head Masters held last Christmas, the Rev. George Butler, the Principal of Liverpool College, said he was grateful for the stimulus they afforded to the masters and boys, for the books that were suggested in the yearly programmes, and for the appointment of Examiners who had special knowledge of the country whose geography was the subject for the year. Invitations to compete were sent to 51 schools. Of these 17 responded, sending 22 competitors in Physical Geography, and 20 in Political Geography. The Medallists were reported by the Examiners to fully deserve their respective honours, and those who had received Honourable Mention, to be well entitled to that distinction. It had always been hoped that some of the very ablest youths at the schools would be induced to take an interest in Geography, and there was one remarkable proof that this had been accomplished, for Mr. McAlister, the Senior Wrangler of Cambridge this year, won the Gold Medal for Physical Geography in 1871. He (Mr. Galton) wrote to ask his candid opinion whether the time he had spent on Geography, in preparing to compete for the Medals, had on the whole been a help, a hindrance, or of no effect, in his academical career. His reply was full of gratitude for the benefits he received from that source, and his allegiance was still strong to the Society for the encouragement they had given him by their award.

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* The Medals offered by the Society for Geography, through the OXFORD AND CAMBRIDGE LOCAL EXAMINATIONS, were awarded for the year 1876, as follows:—OXFORD (June), *Silver Medal*, John Wilkie, Liverpool College. *Bronze Medal.*—Herbert Marlow Ward, Bridgnorth Grammar School (both for General Geography). CAMBRIDGE (December), *Silver Medal* (Physical Geography), *Silver Medal* (Political Geography), both to H. C. Temple, Brighton Grammar School.

Mr. F. Galton then introduced Mr. WALTER NEW, of Dulwich College, to receive the Gold Medal for Physical Geography, stating that he ranked decidedly first among the candidates. Last year he obtained the Bronze Medal, and this year the general style of his answers was such as would have done credit to a mature scholar.

The PRESIDENT, in presenting the Medal, said he was glad to find that the promise given by Mr. New in 1876 had been so richly and amply fulfilled.

Mr. F. GALTON said, before introducing the next in order of merit who was to receive the Bronze Medal, he wished to recall the memory and service formerly rendered to the Society by Admiral Smyth, who died twelve years ago, full of years and scientific honour, and to whom was due just one-half of the credit of the foundation of the Society, which was established by the combination of two contemporary and independent schemes, of one of which Admiral Smyth was the sole originator. It was he who revived the declining fortunes of the Society in 1849, when its numbers were diminishing, its expenses exceeding its income, and it was doubtful whether it would not entirely collapse. In that crisis, Admiral Smyth was elected President, and, under his sagacious and energetic guidance, new life was infused into the decaying Society; its influence made itself more widely felt, its numbers rapidly increased, and its resources were established on a firm footing. According to the reiterated expression of Sir Roderick Murchison, who was his immediate successor in the Chair, it was to Admiral Smyth that the first step was due that led to its present prosperous condition. The Bronze Medallist, Arthur Smyth Flower, of Winchester College, was the grandson of Admiral Smyth.

The President, in presenting the Medal, said it was peculiarly gratifying to him to do so; and he was quite certain that the manner in which the questions had been answered was merely an indication of what Mr. Smyth Flower would do thereafter.

Sir Rawson W. Rawson, as the Examiner in Political Geography, said he was very much disappointed that he had not the opportunity of introducing the two boys who had gained the Medals for Political Geography, more especially as the Bronze Medallist, John Wilkie, gained the Gold Medal last year for Physical Geography, and ran his competitor so close this year, that the papers had to be looked through twice, before it could be decided which was the best. He had heard that, if it had not been for the boy's attention having been devoted to other examinations, it was very likely that he would have won the Gold Medal. At the same time it enhanced the merit of the Gold Medallist, that he was a year younger than Wilkie. They were both from the same school, Liverpool College. Both the papers were excellent.

The President handed the Medals to Sir Rawson W. Rawson for transmission to the recipients.

The Hon. G. C. Brodrick, in announcing the next year's subject as "The Nile Basin, and that part of Africa which lies to the East of it," said this might be called the classic region of Africa, for it was the oldest, as it certainly was the most recent, field of African geographical discovery. It possessed a special interest at present, because if the great scheme for the systematic exploration of Africa now in contemplation should be carried out, it was certain that one, if not more routes to be selected, would pass across that very region. So that in this case, as in the last two years, the candidates for the prizes would have the satisfaction of feeling that they were following in the footsteps of travellers who were actually engaged in making Geography. He was quite sure that by thus connecting geographical education with geographical exploration, the Society was rendering good service to both, and also promoting the interests of general education.

ALTERATION OF THE REGULATIONS.

Sir Rawson W. Rawson rose to propose the amended Rules, of which notice had been given, as having been agreed upon by the Joint Committee appointed by the Special General Meeting of March 5th.

He said the Council felt there was a great difficulty to be dealt with, and that the problem of satisfying all the requirements of the Extraordinary Meetings was rather beyond them; they were, therefore, happy when the Joint Committee, appointed by the General Meeting, took the responsibility off their hands, and it was very satisfactory to be able to state that the Committee had been unanimous as to the recommendations to which they had agreed.

The Motion was that the Rules under Chapter V. of Section 3 of the Regulations be repealed, and the following enacted in their place:—

SECTION 3, CHAPTER V.

1.—The Ordinary Meetings shall be held on the Evenings of the Second and Fourth Monday of every month during the Session; or oftener, if judged expedient by the Council. The Chair shall be taken precisely at Half-past Eight o'clock.

2.—Fellows will be admitted to the Meetings, on showing their "Fellow's Ticket," which will be sent to all whose Subscriptions are not in arrear, at the commencement of each Session.

3.—Visitors, if introduced *personally* by Fellows, or by a Fellow's Ticket transferred for the occasion, may be present at the Meetings; such privilege of introduction being limited to *one* Visitor only for each Fellow.

4.—At the Ordinary Meetings, the Order of Proceeding shall be as follows:—

A. The Minutes of the last Meeting to be read, and, if their accuracy be not questioned by the Meeting, to be signed by the President or Chairman.

B. The Presents made to the Society since their last Meeting to be announced, and thanks ordered to be returned.

C. New Fellows to be introduced to the President or Chairman; result of Ballot of Candidates to be announced, and recommendations of other Candidates to be read.

D. Papers and Communications to be read and discussed.

5.—At the Ordinary Meetings of the Society nothing relating to its regulations or management shall be brought forward. But the Minute-Book of the Council shall be on the Table at each Meeting, and extracts therefrom may be read to the Meeting on the requisition of any Fellow.

6.—On occasions of exceptional interest, to be notified by the President at the preceding Meeting of the Society and duly advertised in the Daily Newspapers, ordinary Tickets will not be available; but applications from Fellows will be received at the Office of the Society for Orders of Admission for themselves and their friends, the number of Visitors to be restricted to one for each Fellow. Such applicants shall, in the order in which they apply, after the above notification, receive orders of admission for themselves and their friends to the seats set apart by the Council, for Fellows and their friends.

7.—On such occasions as described in Rule 6, Eighty Seats shall be reserved for Members of Council and their friends; and Fifty Reserved Seats for Visitors of distinction shall be at the disposal of the President.

Sir MORDAUNT WELLS said he had great pleasure in seconding the Motion to adopt the Report of the Committee. The Committee had come to a unanimous decision to abolish the blue ticket-books, which had been the chief cause of the evils which had been so much complained of, and the result would be, not to curtail the privileges of the Fellows in any way, for they would be allowed to introduce each a friend personally, and, if unable themselves to attend, to transfer their tickets to a member of their family, or any other person. He thought it most desirable, even with reference to the Ordinary Meetings, that this change should take place. Although the new Rules might not insure everything that might be desired, the Members might rest assured that the scenes which had taken place on previous occasions would never occur again. The Members of the Committee appointed by the Council were most anxious and willing to do everything they possibly could to meet the difficulties; and the fact that the Committee had come to a unanimous conclusion was to him, personally, a justification for the trouble he had given in endeavouring to bring about an alteration in the Rules. He felt that the action of the Committee had brought the great body of the Fellows into strict harmony with the Council, whom they so much respected.

Mr. ANDERSON wished to know whether the tickets issued to the Fellows for themselves and their friends on extraordinary occasions would be numbered in the order in which the applications were made, and would represent numbered seats in St. James's Hall?

Mr. JEFFS asked if the number of tickets issued would be limited to the number of seats?

The PRESIDENT, in reply, said what was contemplated by the Committee was that tickets should be issued representing the number of seats available, and those who applied for tickets after that number had been issued would be told that there was no more accommodation.

Mr. WILLIAM MORRIS JAMES said that as any arrangement which excluded Fellows from these Extraordinary Meetings was inadvisable, he would, without any desire to be in opposition to the Council, propose the following amendment, "That the proposed new Rules should be referred back to the Council for consideration."

Dr. A. BUCHANAN seconded the amendment, and was supported by Dr. Glen, who thought that the existing Rules would work satisfactorily if they were really carried out.

Sir MORDAUNT WELLS said no one had been more anxious than himself to maintain the rights of the Fellows; but if the views expressed by the mover of the amendment were approved of, the result would be to exclude strangers altogether from these Meetings.

Lord HOUGHTON having appealed to the Members to give the proposed new Rules a fair trial, and an amendment proposed by Mr. ARTHUR to the effect "that those Members at Extraordinary Meetings, who might fail to obtain special tickets, should be admitted after the Chair had been taken, on production of their ordinary tickets," having fallen through for want of a seconder,

Mr. WILLIAM MORRIS JAMES' amendment was put, and negatived by a considerable majority of the Meeeting.

The PRESIDENT then put the original motion "That the new Rules be adopted," which was carried.

Lord COTTESLOE then moved that the words "or as near the date as may be found convenient" should be added to the present Rule I., Chap. V., Section 1.

The Motion was seconded by Sir HENRY RAWLINSON, and carried without opposition.

A vote of thanks was then moved by Mr. ANDERSON to Sir Mordaunt Wells, and the Committee that assisted him, for the Resolutions at which they arrived.

Professor TENNANT seconded the Motion, which was agreed to.

The Scrutineers then announced the result of the Ballot, the Council's list being declared duly elected.

The PRESIDENT then read the Annual Address on the Progress of Geography.

On its conclusion, Mr. F. GALTON proposed a vote of thanks to the President for his excellent Address. The Fellows were greatly indebted to Sir Rutherford Alcock for the public spirit he had shown in conducting the affairs of the Society.

General STRACHEY seconded the Motion, which was agreed to.

On the motion of Professor TENNANT, a vote of thanks was accorded to the retiring Members of Council, and the Meeting then terminated.

ADDRESS

TO

THE ROYAL GEOGRAPHICAL SOCIETY.

Delivered at the Anniversary Meeting on the 28*th May*, 1877.

BY SIR RUTHERFORD ALCOCK, K.C.B., D.C.L., PRESIDENT.

GENTLEMEN,

THE period which has elapsed since the last Anniversary Meeting of the Royal Geographical Society has been an unusually eventful one in many respects. The return of the Arctic Expedition, quickly following that of the *Challenger*, and of Cameron from his marvellous journey across Central Africa, excited great interest in researches prosecuted in such widely-separated and diversified fields of Geographical discovery. The continued discussion of the various conditions of success, and the scientific results of Arctic exploration, as also the Meeting of the African Geographical Conference in Brussels last autumn, at the invitation of the King of the Belgians, are evidences of active interest which cannot fail to bear fruit at no distant period, and to promote the cultivation of Geography as a science in all its branches.

It has been the endeavour of the Council and myself, during the past year, to effect some of the objects glanced at in the last Anniversary Address of my predecessor, Sir Henry Rawlinson, as being then under consideration. I allude more particularly to the desire to extend in a more strictly scientific direction the range of the Geographical Society's work and influence. In pursuance of the plan sketched out in my opening Address, two out of three Lectures arranged for this Session, on Physical Geography in its higher and more scientific aspects, have been already delivered: the first by General Strachey, being an "Introductory Lecture on Scientific Geography;" and the second by Dr. Carpenter on "The Temperature of the Deep-sea Bottom, and the Conditions by which it is determined."

The names of both these gentlemen would be a sufficient guarantee of the excellence of their work, and its adaptation to the end in view. I may, however, be permitted to say that nothing could in my opinion have better realised the intentions of the Council, or better served the interests of Geographical Science, taken in its largest sense, than the admirable Lecture we listened to from General Strachey. The outline it supplied of the principal scientific aspects of Geography, in relation to its past history, and to the influences of Geographical conditions on the human race, left nothing to be desired. The principal matters that fall within the range of Scientific Geography were all succinctly traced in their natural order and connection; and with such clearness of exposition and arrangement, that the most recondite facts and principles lost much of their unattractiveness to the uninitiated.

So, in like manner, I may say that Dr. Carpenter's review of some of the more striking influences of the temperature of the Deep-sea Bottom, and the conditions by which it is determined, well illustrated the utility of not limiting our view of physical changes to the surface of the earth, or the more obvious forces in operation upon either the land or water. We were shown that, while exploring the bottom of the great ocean-beds, we were dealing with at least two-thirds of the surface of the solid crust of the globe. And in tracing the variations of temperature and its distribution at various depths over the whole oceanic sea-bed, we were in reality studying one of the most important of the physical conditions which affect the distribution of marine animal life and the direction and force of ocean currents.

We have yet the pleasure of anticipation in regard to the third Lecture, by Mr. Wallace, on "The Comparative Antiquity of Continents, as indicated by the Distribution of Living and Extinct Animals," which I hope we shall hear at the Ordinary Meeting of the 25th of June.

In a similar spirit of improvement and progress, the Council have at this moment under consideration the re-organisation of their Map Department, for which the resignation of their Curator, Capt. C. George, after a faithful service of twenty years, affords a favourable opportunity. They have in view to make it not only more complete and readily accessible, but to increase its utility by giving facilities for the use of their Diagrams, when required to illustrate

Lectures in the provinces, at a small fixed charge. It may involve some increased establishment and corresponding expense; but the Society is rich enough not to hesitate, if they can see their way to the useful application of their funds. Lending Diagrams, no doubt, exposes them to damage, and the Society to the cost of their renewal; but a comparatively trifling charge would probably cover this expense, while the service it will render to those who may not have occasion for the same Diagrams more than once or twice, would be great.

Turning from this aspect to our own progress, the Report of the Council affords sufficient proof of the increasing prosperity, and, I trust, of the usefulness of the Society. Our Members and income alike increase year by year; and so largely as regards the first, that it has become a subject of embarrassment on those rare occasions of extraordinary interest—such as the return of Cameron and the Arctic Expedition—when the great body of Fellows desire to attend the Meetings. Some not unnatural dissatisfaction was felt at the impossibility of many, on both these occasions, obtaining seats; and a Special Meeting was called to consider and report upon some Resolutions brought forward by Sir Mordaunt Wells, with a view to remove in the future the causes of complaint. Although some appearance of discord in our midst ushered in the discussion, the result was the appointment, with the full concurrence of the Council, of a Joint Committee of Inquiry; and its sittings, I am glad to say, were marked by the most perfect good feeling, and great unanimity as to the objects of the inquiry. The new Regulations, submitted for your approval at this Meeting, were carefully considered with the single object of providing for the convenience of the Fellows on all occasions—ordinary and extraordinary—and remedying as far as possible the evils hitherto complained of. Whether they will, in practice, effect this end, or be more successful than various others that have been already tried with a similar object, is a question on which the Council scarcely feel justified in pronouncing any very decided opinion; but they saw no objection to their adoption as a tentative course proposed by the Joint Committee appointed for that purpose at the Special General Meeting of March 5th. Some of the difficulties are, I fear, insuperable, and no rules that can be devised will wholly prevent inconvenience and disappointment, when the numbers to be accommodated are so large. One trifling change in the standing rule determining the day for the Anniversary Meeting has been proposed by the Council, merely to guard against being compelled to hold it on a day inconvenient to every one, such as Whit Monday or any other public holiday. Had any discretionary power been allowed, I should have deferred the Meeting on this occasion for another week, as the Whitsun holidays are still unexhausted.

Before terminating these preliminary remarks, I must express on your behalf, as well as on that of the Council and myself, our cordial thanks to the Senate of the University of London for the continuance of the privilege they so liberally accord us of holding our Meetings in this commodious Hall.

I will now proceed to the matters of more permanent interest, which form the proper subject of this Report. And my first duty, in accordance with past traditions and the usual order of proceeding, is to bring before you a record of the losses sustained since the last Anniversary by the death of many distinguished Geographers, and fellow-labourers in this field.

OBITUARY.

ADMIRAL SIR EDWARD BELCHER, K.C.B.—By the death of Sir Edward Belcher, on the 18th of March, in his 78th year, the Society has lost one of its oldest and most distinguished Fellows. He was one of the original members, of whom scarcely twenty now remain, who joined it on its formation in 1830.

Sir Edward Belcher was both a scientific and a practical cultivator of Geography, as well as an accomplished master in the kindred science of Hydrography. He was essentially a worker. A student of science from his boyhood, he has left his mark on many branches of it, and his works will long survive him. Many who have preceded him, and some who still remain, have owed, in great measure, to his example and instruction much of the eminence to which they may have attained in public life. It is, however, to his services as a geographer and explorer that we confine ourselves in this brief record.

He first brought himself into public notice when he sailed with Beechey as a Lieutenant and Surveyor on board the *Blossom*, in her voyage to the Pacific and Behring Straits. In this voyage, which extended over nearly four years, Lieutenant Belcher took a most active and important part.

In the comparatively imperfectly known condition of the Pacific at this period, the duties of a surveying ship were chiefly confined to fixing accurately the astronomical positions of the various groups of islands which were fallen in with, making such cursory examinations and surveys as time would admit of, and expunging from the charts many supposed dangers which the uncertainties of longitude had repeated in several positions, and which proved a source of anxiety and perplexity to the ordinary navigator.

In this way the *Blossom*, leaving the coast of America, visited the Easter, Ducie, and Pitcairn Islands, the latter celebrated in connection with the mutiny of the *Bounty*; she thence proceeded to the Gambier Group, which were surveyed in considerable detail; subsequently, to many of the low coral isles of Polynesia, when several new ones were discovered, and the positions of others correctly determined, and in March 1826, she reached Tahiti, the principal of the Society Group. After remaining a few weeks here, she sailed for Behring Straits, by the Sandwich Isles and Kamtchatka, a portion of her captain's instructions being that she should pass the summers of 1826–27 in this region in order to co-operate with Parry and Franklin, then exploring the Arctic Seas, in case either of them should succeed in accomplishing the North-West Passage. In July 1826, the ship reached Kotzebue Sound, when, with the assistance of her decked boat, a survey of the coast to the North was commenced, the ship herself reaching a point which was named Cape Franklin in 71° 7′ N. latitude, and her barge a position considerably further advanced. Foiled in their expectation of meeting Franklin's land party, although the boat had reached within 120 miles of his farthest western position, the *Blossom* quitted Behring Straits in the middle of October, and returned to resume her surveying duties in the Pacific, until the time should again have come round for a second attempt. During this second stage of the voyage, San Francisco, then under the Mexican flag, was visited and surveyed. From thence the ship proceeded again to the Sandwich Isles, searching unsuccessfully for various reported islands on the route, and arrived at Honolulu in January 1827. Early in March she bore away across the Pacific for China, rectifying the positions of such islands as lay near her course. Macao was reached in April. The Loo Choó Isles were subsequently visited, and some weeks were passed in making such observations and examinations as were possible in this little-known locality. Passing thence northward to Kamtchatka, Kotzebue Sound was again reached on the 5th of August, 1827. Here the decked boat was prepared for a second voyage of exploration to the North, and under Lieutenant Belcher's command examined the coast from Chamisso Island to a position beyond Icy Cape, a distance of between 300 and 400 miles. On his return to Kotzebue Sound, after experiencing many risks, his little vessel was driven on shore in a gale of wind, and totally wrecked on Chamisso Island, three of her crew being drowned. The *Blossom* now finally quitted Behring Straits, all hope of attaining the principal object of her mission, viz. the meeting with Franklin, being at an end. After revisiting California and other ports on the American coast, she rounded Cape Horn, and returned to England in October 1828.

Lieutenant Belcher having been promoted to the rank of Commander in 1829, was in 1830 appointed to the command of the *Ætna*, employed in surveying the West Coast of Africa and parts of the Mediterranean. One of the principal features of his African work was the close examination of the dangerous shoals which extend some 70 miles off the coast in the neighbourhood of Rio Grande, south of the Gambia. This he effected by carrying off a floating triangulation by means of his ship, the *Raven* tender, two decked barges, and large beacon buoys, all of which were moored in position, and thus formed fixed objects from which to correctly determine the position of the shoals, and to carry out the necessary soundings. The violent surf on this part of the African coast, together with the hostility of the native tribes, rendered surveying not a little harassing as well as hazardous. It was in this neighbourhood that Captain Skyring subsequently fell a victim to the treachery of the natives.

The *Ætna* was ordered to pass the winter of 1832 within the bar of the Douro River, for the protection of British interests during the struggles between the parties of Doms Pedro and Miguel. Here Captain Belcher lost no opportunity of distinguishing himself; on one occasion he opened a communication with the Miguelites, by which the merchants inside and the squadron outside were enabled to obtain fresh supplies. The *Ætna's* crew, moreover, habitually manned the Bar boat which kept up communication with the squadron, and while exposed to the danger of the surf in crossing the Bar in rough weather, not unfrequently became a target for both the contending parties. Being on the spot myself as one of the besieged, I can bear personal testimony to the excellent service rendered by Captain Belcher and his crew during this trying period.

On the raising of the siege of Oporto, the *Ætna* went up the Mediterranean, and among other services there thoroughly examined the Skerki Rocks, settling the question that there was one, and not two, as had been reported.

On the paying-off of the *Ætna* in 1833, Captain Belcher was employed for some time on the survey of the coasts of the United Kingdom, principally in the Irish Channel.

We next find him in command of a Surveying Expedition, composed of the *Sulphur* and *Starling*, in the Pacific. In this voyage, like that of the *Blossom*, it was not contemplated that any very extensive surveying operations of a consecutive character could be carried out; neither the coasts nor isles of the Pacific were yet ripe for such operations; the great land-marks of the picture, so to speak, had to be firmly established before the details could be filled in, and so the voyage in question was principally occupied in carrying chronometrical distances between distant points, and making such accurate surveys as time would permit over a more or less limited area in the neighbourhood of these principal stations. Thus at Panama, where Captain Belcher assumed the command of the Expedition in January 1837, a survey was made of its bay and neighbourhood, when the two vessels immediately proceeded to San Blas in Mexico, nearly 2000 miles distant, examining *en route* the ports of Realejo and Libertad; they then stretched across the Pacific to the Sandwich Isles, a further distance of nearly 3000 miles. In this run Clarion Island was visited, and a cluster of islands which had been reported between the meridians of 130° and 135° W. proved not to exist, the same which had been unsuccessfully searched for by the *Blossom*.

On the 23rd of July the ships sailed from the Sandwich Isles for the North, and reached Port Etches, in King William Sound, lat. 60° 30′ N., towards the end of August. The principal object of this cruise was to settle the discrepancies between the longitudes of Cook and Vancouver, and to determine the position and height of that great feature in the coast-range of North-West America, Mount St. Elias. The necessary surveys having been completed for the accomplishment of these objects, the Russian Settlement of Sitka was next visited; and, after calling at Nootka Sound, in Vancouver Island, to determine the longitude, the ships proceeded to San Francisco in California, which they reached on the 19th of October. During their stay there of about a month, the River Sacramento was surveyed for a distance of 150 miles from the ships' anchorage. Leaving San Francisco the end of November, and examining several portions of the coast and islands adjacent, San

Blas was again reached on the 20th of December, 1837. The next important stage on the voyage was Callao, where the *Sulphur* arrived in June 1838, having in the mean time visited and surveyed Acapulco, the Gulf of Papagayo, Port Culebra, and Cocos Island.

After a refit at Callao, the Coast of Peru was surveyed for about 60 miles to the south, when the ships again proceeded north, and, after securing observations at Payta, and making some examinations in the Gulf of Guayaquil, they arrived at Panama in October, where the first stage of the voyage may be said to have ended.

By the end of March 1839, surveys were completed of the extensive Gulfs of Fonseca and Nicoya in Central America, as well as of Pueblo Nuevo and Baia Honda, after which the Sandwich Isles were again visited, and then the ships moved northerly, repeating, to a great extent, the cruise of 1837, verifying observations then obtained, and adding to the work by new surveys. By September, the Bar and entrance of the Columbia River had been surveyed, and a reconnoissance of the river made as high as Port Victoria, the chief trading port of the Hudson's Bay Company. After leaving the Columbia, the ships proceeded to San Francisco, and from thence examined the Coast of California, and surveyed its several ports as far south as Cape St. Lucas, the entrance of the great gulf. At San Blas, which was reached in December 1839, orders were received to return to England by the western route, thus completing the voyage by a circumnavigation of the globe.

Accordingly, on the 1st of January, 1840, the two vessels set sail once more across the Pacific. The islands of Socorro and Clarion were visited, and their positions determined. The Marquesas Islands were reached the same month, and then they passed on to Bow Island, a coral formation in the lagoon, where six weeks were spent in the operation of boring for the volcanic formation on which these islands were suspected to rest. Subsequently Tahiti, and other of the Society Islands, were visited, and in succession the Friendly Group, the Fijis, New Hebrides, New Ireland, and New Guinea; at all of which observations were made, and such surveys as time would admit of.

The ships then passed through Dampier Strait, called at Gilolo, Amboyna, Macassar, and reached Singapore in October of the same year. Here Captain Belcher found orders to proceed immediately to China, and for more than a year the *Sulphur* and *Starling* took an active part in the hostilities with that country, making such surveys as were essential to enable the fleets and the land forces to act with the best effect, and which tended materially to the capitulation of Canton, and the successful issue of the campaign.

The *Sulphur* finally arrived in England in July 1842, after a voyage extending over little short of seven years. For these services Commander Belcher received his post-rank, was nominated a Companion of the Bath, and shortly afterwards received the honour of Knighthood.

On the conclusion of peace with China, which followed shortly after the *Sulphur's* return, it was decided to commence a regular survey of the coasts, ports, and rivers, north of Canton; and the *Samarang*, a 26-gun frigate, was prepared for this service, Sir Edward Belcher being appointed to the command of her in November 1842. Political considerations, however, led to the *Samarang's* sphere of action being shifted to Borneo and the neighbouring islands of the Eastern Archipelago north to Japan—a sufficiently wide limit, embracing as it did some 40 degrees of latitude.

The vessel reached her station in the middle of 1843, and immediately commenced her work at the Sarawak on the west side of Borneo. Here she had the misfortune to ground on a reef, fall over, and sink in the river; but by the skill and energy of her captain was raised again, and, with the loss of less than a month's time, proceeded on her mission, viz. the examination of the Bashee Islands, the Majico-Sima group east of Formosa, Luzon, Mindoro, and Mindañao of the Philippines; the Sulu Isles, Celebes, and Ternate.

At the conclusion of this stage of the voyage, Sir Edward Belcher having been severely wounded in a boat-encounter with the piratical prahus of Gilolo, the ship returned to Singapore, and after a short rest there resumed her employment, revisiting some of her former stations, examining portions of Loochoo, the island of Quelpart, the Korean Archipelago, and Japan; she returned thence to the Mindoro and Sulu Seas, and concluded her labours by surveying the north-west coast of Borneo, from the island of Balambanjan, in the Strait of Balabac, to Labuan, then just become a British possession. The *Samarang* was now ordered home, and reached England on the last day of 1847.

Sir Edward Belcher's next employment afloat was in command of an expedition to the Arctic Seas in search of the missing ships under Sir John Franklin. This expedition, consisting of five vessels, left England in April 1852, and on arrival at Beechey Island, in Barrow

Strait, was separated into two divisions, the one proceeding westward to Melville Island, while Sir Edward himself, with two ships, ascended the Wellington Channel, and wintered at its head in an inlet which he named Northumberland Sound, in lat. 76° 52′ N. In the spring of 1853 he personally explored by sledges to the north, discovered and partially surveyed North Cornwall in 77° 30′ N., and the strait which bears his name leading eastward into Jones Sound; while other parties from his ships discovered and explored the north shores of Bathurst Island and Melville Island; and, crossing the latter, communicated with the division of the squadron under his second, Captain Kellett. A second winter was passed in Wellington Channel, and in the autumn of 1854, there seeming no probability of extricating the ships, four of them were abandoned, the crews returning over the ice to Beechey Island, whence they proceeded to England. With this voyage closed Sir Edward Belcher's active professional career; but he has continued to be a valued working member of this and other kindred Societies, and his active and gifted mind was devoted to the pursuit and cultivation of science and knowledge up to the latest days of his life.

Lord MILTON.—Amongst the Fellows of more than ordinary distinction, removed by death during the past year, I regret to have to include the name of Viscount Milton, who died in January last, at the early age of thirty-eight. Lord Milton had been a traveller from his youth up, and, in spite of a delicate frame and frequent illness, he succeeded in accomplishing substantial geographical work of considerable importance. His uncertain health compelled him to seek fresh life and vigour from time to time in some more bracing climate; and after several journeys to the Continent, and one to Iceland in 1861, he crossed the Atlantic to North America, and visited the regions to the west of the Red River Settlement in the Hudson Bay Territories. The favourable effect upon his health produced by the invigorating climate of the Great Plains, and the charm of the wild life there, induced Lord Milton to return there the following year, in company with Dr. Cheadle, with the view of making a more extensive exploration of the North-West Territory. At that time the gold-mines of Cariboo, in British Columbia, were attracting much attention, and the only practicable route to them was the extremely circuitous one by Panama, or the little less indirect and more toilsome journey through United States territory by way of California. Although the rich mining districts of British Columbia lie almost in the direct line across the continent through British territory, the way was barred by the great chain of the Rocky Mountains; and on each side of the main range lay a wide extent of rugged country, covered with dense forest, and in great part unexplored. Lord Milton and Dr. Cheadle determined to make the attempt to discover a way through this difficult and trackless region which separated the plains of the Saskatchewan from the mining districts of British Columbia, and they set out on this expedition in the spring of 1863. The story of this adventurous and toilsome journey, graphically related by Lord Milton and his companion in "The North-West Passage by Land," is probably familiar to most of us. Provided with very inadequate resources for such an arduous undertaking, the party endured great hardships and privations before they succeeded in forcing their way by the Yellow Head or Leather Pass, and through the dense forest of the North Thompson River, to the plains of Kamloops. Had Lord Milton enjoyed the full vigour of health, his enterprising spirit would have led him to further geographical research. But the renewed strength, which, in spite of its hardships, he eventually obtained from this journey, did not endure. After the lapse of a few years, he was compelled by increasing illness to resign the seat in Parliament to which he had been elected after his return, and he once more crossed the Atlantic to North America. The last few years of his life he spent chiefly in the highlands of Virginia; returning to England, however, shortly before his death at the commencement of the present year.

The practical value of Lord Milton's work has been well shown by subsequent events. His Expedition served, perhaps more than anything else, to direct public attention to the immense value of the southern portion of the Hudson Bay Territories, and to the great importance of establishing a way of communication between the eastern and western portions of British North America. This has been followed by the acquisition, by the Dominion of Canada, of the Hudson Bay Territories; and since that was effected, complete surveys have been carried out for a road and railway across the Rocky Mountains into British Columbia. These works have, indeed, been actually commenced; and the line chosen is identical with that followed by Lord Milton's Expedition. The route traversed by his party, with so much toil and difficulty, will before long complete the link of communication between the Provinces of the Canadian Confederation, and eventually become the great highway to the Pacific through British North America.

LOUIS ARTHUR LUCAS was the only surviving son of the late Mr. Philip Lucas, of Manchester, a gentleman well known for his liberal charities and philanthropy. Our deceased Associate was born on the 22nd of September, 1851, and at the time of his death was only twenty-five years of age. He was educated at University College School, in Gower Street, from which he passed to University College, where he showed a marked taste for scientific subjects. He studied Chemistry under Dr. Williamson, and was an apt and skilful experimentalist. At a very early age he expressed a desire for a life of adventure; but his parents having destined him for commercial pursuits, he was urged to fit himself for a business life at Manchester. His thirst for travel and scientific enterprise, however, prevailed; and was increased, rather than slaked, by a trip to Switzerland in 1870, during which he made an unusually rapid ascent of Mont Blanc. Before settling down to business, he visited the United States in 1872; and, after making the ordinary tour through Canada and part of the Eastern States, extended his tour to the "Far West," for the purpose of seeing the Indians and shooting buffaloes. By good fortune he met General McClellan on the Pacific Railway, who most kindly gave him letters of introduction to the Commandants of the Forts in the West, and these officers afforded him the opportunities he required. He shot buffalo and deer in Nebraska, puzzled the Indian Chiefs by his tricks of legerdemain, in which he was a most skilful amateur, and returned home at the end of 1872, after a most adventurous trip of four months' duration.

At the commencement of the following year he had the misfortune to lose his surviving parent (his mother), and soon after fell into a delicate state of health, for which change of air and scene were ordered. He selected Egypt as his health resort, and started at the end of 1873, with a doctor as his companion. He did not on this occasion show any marked spirit of enterprise; his state of health, and the domestic affliction from which he had suffered severely, precluded the desire for much adventure. However, he thoroughly enjoyed the Nile; and Eastern life, as so often is the case, cast its *glamour* over him, and on leaving Egypt he determined, whenever the opportunity offered, to return and see more of the country and of the people. His return to England was delayed by an attack of typhoid fever, supposed to have been caught at Naples, the subsequent effects of which lasted for many months, during which time he devoted himself to the study of science. He studied Botany with ardour, and made considerable progress in that subject. He also studied Comparative Anatomy, Zoology, and Geology, and during the whole winter and following spring led the life of an industrious student. Feeling now qualified for the great task he had set himself, in the month of July 1875, he announced to his family his intention to devote himself to African exploration, and that he had determined to seek out the source and the course of the River Congo. His family received this intimation with dismay, feeling assured he was unfitted by his youth and constitution for such an undertaking. They addressed themselves without delay to Sir Henry Rawlinson, our late President, begging him to use his influence to deter him from so hazardous an expedition; but Sir Henry's endeavours and the efforts of other influential friends were alike unavailing. Mr. Lucas was resolved to go, and organised his Expedition independently of our Society. Having become acquainted at the Geographical Congress of Paris in July 1875, with Dr. Nachtigal and Dr. Schweinfurth, he obtained valuable advice regarding his equipment and route from those travellers. He left London on the 2nd of September 1875, and made his way to Cairo, where he remained several weeks learning Arabic, engaging servants, and making preparations for his Expedition. He obtained a firman from the Khedive, after a personal interview, at which he was most graciously received, authorising him to enlist and train soldiers for escort; and from all quarters he received assistance for the great objects he had in view. He travelled by way of Suez, Suakim, and Berber to Khartum, where he arrived at the end of January 1876. He remained for nearly three months in Khartum, organising his Expedition, and making preparations for the absence of several years beyond the limits of civilisation. Delays also occurred in communicating with Colonel Gordon, with whose consent only could a traveller ascend the Nile into the Central Provinces. All difficulties having been overcome, in April Mr. Lucas left Khartum, and, with the assistance of the steam-vessel lent by Colonel Gordon, ascended the White River as far as Lardo, where he met Colonel Gordon. It very soon became apparent that Mr. Lucas's Expedition could not succeed. Colonel Gordon showed him that his escort was too weak and too untrustworthy for him to venture to the southward, either through Albert Nyanza or through

Rumanyika's country, between the Lakes Victoria and Albert to Nyangwé, which place he wanted to make the true starting-point for his discoveries. Colonel Gordon pointed out to him that if he persevered in his Expedition, with such an insufficient escort, he would be either massacred by hostile natives, or deserted or shot by his own men; and that he (Colonel Gordon) would not permit him to go on to certain destruction. Mr. Lucas most reluctantly yielded to these arguments, and later submitted himself unreservedly to Colonel Gordon's advice. Colonel Gordon's advice was, if still bent on African exploration (against which he strongly dissuaded him as being unfitted by health and constitution), to return to Khartum; and thence go by way of Suez to Zanzibar, there to organise his Expedition, and make a fresh start under better auspices, and in a less deadly climate, to those sources where he hoped to gather fame and honour. Mr. Lucas nevertheless accompanied Colonel Gordon to the Albert Nyanza, and navigated the northern portion of the Lake in the first steamboat ever launched on its waters. In August 1876, Mr. Lucas turned his steps northwards, intending to carry out his original scheme of the exploration of the Congo in the manner suggested by Colonel Gordon. His health had already suffered considerably from fever, and when he reached Khartum, on the 4th of September, he was unable to walk. Indeed, for several weeks previously he had been carried on an angareb by his porters. During the months of September and October, attack followed attack of fever and dysentery, and, utterly prostrated by these illnesses, he at last was compelled to give up his cherished scheme of African exploration, and determined to return to England. This resolution came too late. On the 26th of October, though dreadfully weak, he was sufficiently improved in strength to be moved from Khartum. He left in a dahabiah especially provided by the kindness of the Khedive, and reached Berber on the 2nd of November. He then, eager to reach home, began the desert journey to Suakim, without waiting to recruit his strength; he crossed the desert in six days, and on the 18th of November he arrived at Suakim. Whether exhausted by the fatigue of the journey, or as a result of the disease, at Suakim he had an accession of illness. He was in an exhausted condition put on board the S.S. *Massowah*, bound *viâ* Jeddah for Suez, and within twelve hours, viz. on the 20th of November, he died suddenly, at the early age of twenty-five. His remains were landed at Jeddah, and interred in the cemetery there with much honour and respect. His aims were noble, his character inflexible and most persevering; his scientific qualifications were considerable; he possessed great warmth of heart and most genial manners, which endeared him to all who knew him, but he lacked the physical qualities necessary to constitute an African explorer.

Captain John Edward Davis, R.N.—The sudden death of this active and zealous officer has caused the greatest grief amongst his connections and friends, many of whom, like himself, were well known in geographical circles.

He entered the service in 1828 or 29, and served in various ships on the Pacific and West India Stations. In 1835 he joined H.M.S. *Beagle*, under the late Admiral Fitzroy, which may be said to be the commencement of his thirty-six years' service in the scientific branch of the Royal Navy. Whilst in that ship he assisted in the survey of the coasts of Chili and Peru.

In 1839 he was appointed second master of H.M.S. *Terror*, on the Southern Expedition commanded by the late Sir James C. Ross, and made three voyages to the Antarctic regions, fulfilling the duties of surveyor and draughtsman to the Expedition. On his return in 1844 he was promoted, and appointed to the survey of the West Coast of Ireland, under Captain G. A. Bedford (now Vice-Admiral) where he served with great credit for nearly ten years, joined afterwards the survey of the South Coast of England and that of the Orkneys.

In the spring of 1860 he was detached from home service to accompany the *Fox* in her Expedition to discover tidings of Sir John Franklin's ships, returning to Portland Roads in November of the same year. Since that date he had been employed as Naval Assistant in the Hydrographic Office of the Admiralty. During his service there he conducted a series of experiments on thermometers for deep-sea purposes, which led to those used so successfully in H.M.S. *Challenger* in her recent voyage of discovery, and he devised also improvements for sounding in great depths.

He was the inventor of an improved astronomical sextant, by which, through the adaptation of a micrometer movement, a series of observations can be made without the necessity of reading-off at the time of observing, and other advantages, which met with the approval of the Astronomer Royal. He also completed and published Azimuth Tables that had been commenced by the late Staff-Commander Burdwood.

Captain Davis had only retired from active service about two months, having served in the Navy for nearly half a century. Latterly he had been giving lectures in various parts of England on Arctic Explorations, and at the time of his sudden death was engaged to deliver one at Bristol, for which he had just completed drawings and diagrams.

William Bollaert, our late genial Associate, was born in 1807, and at an early age entered into scientific pursuits. He was for some time Chemical Assistant to Sir Humphry Davy, Mr. Brande and Mr. Faraday, at the Royal Institution, and made some original discoveries in benzoic acid. But, owing to his father's affliction of blindness, and consequent inability to attend to his profession of medicine, Mr. Bollaert was unable to continue his connection with the Laboratory of the Royal Institution, and accepted an offer to go to Peru as assayer and chemist in the survey of silver mines. His subsequent accounts of the silver mines of Guantajaya and other famous mines of the Province of Tarapaca, which have been published, contain much useful information.

Whilst in Peru, Mr. Bollaert devoted a great deal of his attention to the geography, geology and natural history of the country, and wrote many interesting papers on these subjects, which have been read and published by various Societies. In 1827 he made, at the request of the Intendente Castilla (afterwards President of Peru), a survey of the Province of Tarapaca, and his "Observations on the Geography of Southern Peru, including Survey of the Province of Tarapaca and route to Chile by the coast of the Desert of Atacama" were read before our Society in 1851. He also published much useful information regarding the nitrate of soda, and the formation of the new boracic acid mineral, in Peru. Mr. Bollaert was one of the first "white" men who crossed the Desert of Atacama, exploring the country, and searching for the meteoric iron of Atacama.

Returning to England, Mr. Bollaert endeavoured to make arrangements, under the patronage of our Society and of the Government, to explore the East Coast of Africa from Zanzibar, to visit Lake Nyassa, and to ascertain the probabilities of an Expedition crossing the African Continent. He was, however, unable to get his proposals carried out.

In 1832–33 he accompanied the late Sir John Milley Doyle to Portugal, and served as a volunteer. During this time he gathered the materials for his publication on the 'Wars of Succession of Portugal and Spain from 1826–1840, containing an account of the

Siege of Oporto in 1832, and Political and Military Reminiscences.' For his services he received the War Medal, and was created a Knight of the Order of the Tower and Sword of Portugal. He was subsequently engaged in assisting the late Baron de Haber in financial matters relating to Dom Carlos and Dom Miguel, and received from the hand of Dom Miguel the decoration of the Order of Fidelity.

On the abdication of Dom Miguel and Dom Carlos, Mr. Bollaert went to Texas to explore the country as to its fitness for European emigration, and at the request of H.B.M. Consul at Galveston, he examined the interior and coasts, and made Reports thereon, which were sent to the Admiralty. He supplied some interesting papers on the Indian tribes of Texas, and on the botany and natural history of the country, for various Societies and publications. But, owing to his health being impaired by yellow and intermittent fevers, he returned to England.

In 1853 Mr. Bollaert received the Bronze Medal of the Society of Arts from the hands of the President, the late Prince Albert, for his "Essay on Salt, with Observations on the Origin of Salt and Saline Bodies," and giving further details of the inexhaustible quantities of nitrate of soda existing in Peru, and information concerning a new boracic acid mineral. He afterwards returned to Peru, and made some valuable antiquarian and ethnological researches in New Granada, Ecuador, Peru, and Chile, accounts of which, with his 'Observations on the Pre-Incarial, Incarial and other Monuments of Peruvian nations,' were published by Messrs. Trübner & Co. Several interesting papers on the gold ornaments, pottery, &c., discovered by him in the ancient tombs of Peru, were published by the Society of Antiquaries in London, and he presented to the British Museum several specimens, amongst others a unique vase representing the head of a Chinese Ruler.

Mr. Bollaert was requested to examine the coal mines of Chile, and his Reports on the same were read in the University of Santiago in Chile, and before the Royal Geographical Society in London. For this, and for his researches in Peru, the University of Santiago elected him a corresponding Member. After remaining for some time in South America, visiting the whole of the West Coast, crossing the Andes and visiting the Argentine Republic, Paraguay, and the Brazils, he returned to England.

A severe illness and rupture of the lungs quite incapacitated him for any further active life; but up to the close of his career he took the greatest interest in the Societies of which he was a Member, and from time to time published accounts of his researches for the Royal Geographical Society, the Ethnological Society, the Society of Antiquaries, the Medico-Botanical Society, the Anthropological Society, the Society of Literature, and for various publications.

He died on the 15th of November last, in his sixty-ninth year.

Professor K. E. VON BAER.—This eminent savant, equally celebrated as a Naturalist and Geographer, died on the 28th of November last, at Dorpat. He was elected Corresponding Member of our Society as far back as 1843, about which time he acquired a high reputation as a scientific traveller, by his journey to Lapland and Nova Zembla, which he undertook under the auspices of the Imperial Academy of Sciences of St. Petersburg. His family came originally from Hanover; but at the time of his birth, in 1792, were settled in Esthonia, and it was not until 1834 that Von Baer took up his permanent residence in St. Petersburg. He had received a medical education, first at Dorpat, and afterwards at Vienna and Würzburg; but his tastes inclined him, as he grew to manhood, to the study of Zoology, and in 1822 he was appointed Professor of that science at Königsberg, where he founded the now existing Zoological Museum. His eminently active mind preserved him from a life of contracted studies in a special branch of science, and he was always to the fore as an organiser or administrator in all that concerned the subjects which he had studied. In the Imperial Academy of St. Petersburg, he first served as Councillor and Librarian; but his activity was afterwards displayed in a variety of public ways,—in Educational questions, University organisation, sanitary matters, and so forth. His Expedition to Lapland and Nova Zembla took place in 1837, and he was the first to make and bring home a collection of plants from the latter region, where he spent six weeks in assiduous research. In the years 1851 to 1856 he was employed by the Government in investigating the fisheries in the Volga and Caspian, the result of which mission was the important geographical work in four volumes, with Atlas, published by him at St. Petersburg in 1857–9. On his retirement from the Academy in 1861, he was elected an Honorary Member. Although this is not the place to enter into details regarding his work as a Biologist, his great and special services to science as a philosophical thinker and worker in the great subject of evolution, must be mentioned. In connection with this may be cited his important work, 'Ueber Entwickelungsgeschichte der Thiere.' Among his geographical works may be enumerated his Paper on the effect of the earth's rotation on the erosion of river-banks—an ingenious treatise, in which the tendency of rivers gradually to swerve from a direct course, since known as "Baer's Law," was attempted to be proved and explained—and his well-known 'Kaspische Studien.' Conjointly with Count von Helmersen, he also edited the long series of volumes of original Papers on Russian Geography, entitled 'Beiträge zur Kenntniss des Russischen Reiches und der angränzenden Länder Asiens,' a serial publication of great value to geographical students, which extended over the years from 1839 to 1873.

The MARQUIS DE COMPIÈGNE.—This enterprising traveller, whose premature death at Cairo on the 28th of February last, at the age of thirty years, excited much public attention at the time, was a Fellow of our Society, having been elected in 1873. He commenced his career as a traveller by a tour, chiefly inspired by the love of adventure and the chase, in the Southern States of America, particularly in Florida, of which he published an amusing account in the 'Tour du Monde.' In 1873, actuated by the desire of Geographical discovery, he undertook, with his colleague, M. Marche, a more serious journey to the Gaboon, and organised there an Expedition up the River Ogowé, which, according to the report of traders and natives, had its origin in a lake in the far interior of Equatorial Africa. The means for this important journey were obtained, M. de Compiègne subsequently stated, by the sale of objects of Natural History obtained by himself and his companion. Arrived at the Gaboon, they commenced their boat-journey up the Ogowé on the 9th of January 1874, and by the end of March of the same year had reached the country of the cannibal Osyeba, a tribe which had not previously been visited by Europeans. Here at the confluence of the Ivindo their party was attacked by this hostile and implacable tribe, and after the loss of many men in the struggle which ensued, they were forced to retreat. The observations made during this adventurous voyage were published by M. de Compiègne on his return to Paris, under the title of 'L'Afrique équatoriale;—Gabonais, Pahouins, Gallois; et Okanda, Bangouens, Osyeba," 1875. About the same time, an Expedition on a larger scale, under the leadership of M. de Brazza, was organised in Paris, for the continuation of the line of discovery opened up by this enthusiastic young traveller; but the much impaired state of his health did not permit him to take part in it, and he accepted the offer made to him by Dr. Schweinfurth of the post of Secretary to the Société Khediviale de Géographie, recently established in Cairo, of which Dr. Schweinfurth was then President. The duties of this position he had filled for about a year, when he died, in consequence of a wound received in a duel, on the 28th of February last.

MONSIGNOR FRANCESCO NARDI.—In the month of March last died at Rome one of our Honorary Corresponding Members, Monsignor Francesco Nardi, for some particulars of whose biography I am indebted to his old and intimate friend, His Excellency the Commendatore Cristoforo Negri, also one of our Honorary Corresponding Members, and the distinguished Founder of the Geographical Society of Italy. Francesco Nardi was born of a noble family at Vazzola, near Conegliano, in the province of Treviso, in 1808. He entered the ecclesiastical profession, and soon distinguished himself in his studies by versatility of genius and a most retentive memory. During the Austrian dominion in Venetia and Lombardy, many Italian youths went to study at Vienna, Monsignor Nardi among them, and he was in the superior Institute of Theology, founded by Joseph II., for the teaching of principles alike uniform and noble in the education of the clergy. Cristoforo Negri was at the same time studying law in the same University. A few years afterwards both were nominated to Professorships in the University of Padua,—Nardi of Common Law, and Negri of Political Science. They had already both of them studied Geography at Vienna, and continued their studies at Padua, and both in turn lectured there on Statistics. The Revolution of 1848 separated them. Negri emigrated to Turin, Nardi remained at Padua, whence he removed to Rome as Auditor of the Rota Romana for Austria. There Monsignor Nardi read to the Accademia Pontificia de' nuovi Lincei several geographical papers on the African and Polar Expeditions, and on the Cruise of the *Challenger.* Politics, however, had already diverted him from peaceful and quiet studies. He was one of the most indefatigable, earnest, and even violent defenders of the cause of the Pope; Director of the 'Voce della Verità' newspaper, and a frequent traveller to every part of Europe on missions imposed upon him or undertaken voluntarily. This precluded him from that eminence in geographical studies to which he might have aspired from his genius, his culture, his linguistic attainments, and his widespread relations with men of learning in every part of Europe and elsewhere. For many years Nardi had been a member of numerous scientific bodies, and seemed likely soon to attain the Cardinalate, a position he much coveted, having been nominated "Secretary of the Congregazione dei Vescovi," an office which usually opens the road to that dignity.

It may be said of Nardi that no difference in political opinions, even the most diametrically opposite, ever interfered with his affection and esteem for those whom he had once reckoned among his old friends.

CHARLES ENDERBY, F.R.S.—The late Mr. Charles Enderby was the son of Mr. Samuel Enderby, whose name was familiar to all geographers some thirty years ago as the enterprising merchant whose vessels, engaged in the whale fishery of the Southern Seas, made so many important discoveries in the Antarctic Ocean. Among these discoveries was that of the Auckland Islands, south of New Zealand, made by Captain Abram Bristow in 1806, whilst in command of one of the vessels belonging to the Messrs. Enderby; and some years after, Enderby Land, further to the east.* Our late Associate, on succeeding to the business with his brothers, maintained the reputation of his house for its enlightened care of scientific interests; and it was under his direction that Captain Biscoe discovered Graham Land, and other portions of the Antarctic continent, previous to the voyage of Sir James Ross. The Auckland Islands were ceded to Messrs. Enderby by Her Majesty's Government as a whaling station, and in 1849 a whaling establishment was formed there under their auspices. Previous to this, Mr. Charles Enderby published a pamphlet on the group, under the title of 'The Auckland Islands, their Climate, Soil, and Productions,' a work which comprises nearly all that was known at the time regarding this region. Mr. Enderby served on our Council in the years 1842–4, and again in 1845 and 1847. He died on the 31st of August last. He was one of the original Members of the Society, having entered in the year 1830.

The Right Hon. Sir DAVID DUNDAS.—This distinguished lawyer, who died on the 31st of March last, at his residence in the Temple, always took a deep interest in geographical studies. He was for many years a Member of the Council of the Hakluyt Society, and was latterly its President. The eldest surviving son of the late Mr. James Dundas, of Ochtertyre, in Perthshire, he was born in 1799, and educated at Westminster School and Christ Church, Oxford, where he took his degree at the age of twenty-one. He was called to the Bar in 1823, and made Queen's Counsel in 1840. In the latter year he was elected Member of Parliament for Sutherlandshire, and represented that county continuously for twelve years, until 1852; in 1861 being again re-elected until 1876. He was Solicitor-General from 1846 to 1848, and Judge-Advocate-General from 1849 to 1852. He was elected a Fellow of our Society in 1841, and served on the Council in the years 1853 and 1854.

Captain CHARLES STUART FORBES, R.N.—The death of this adventurous officer and genial companion, at the comparatively early age of forty-seven, was felt as a serious loss by the numerous circle of friends who so highly valued him. He was a Member of our Society since 1860, and in 1866 contributed an interesting paper on a journey he had made the previous year round the shores of Volcano Bay in the island of Yesso—a paper which excited an important discussion on the occasion of its being read,* and was afterwards published in the 'Journal,' vol. xxxvi. Captain Forbes commenced his professional career as a Midshipman under Sir Everard Home, on the Australian Station. He commanded a gunboat in the Baltic during the Crimean War, and afterwards served in the China War as Lieutenant commanding the *Algerine.* After the conclusion of peace with China, he had scarcely reached home when the remarkable campaign of Garibaldi in Sicily and Naples excited his adventurous and generous spirit, and he threw himself with ardour into the daring operations of the revolutionary chief. He participated in the first action outside Palermo, and was the first to enter Naples, and bring to his chief the intelligence that the Royal troops had evacuated the city. These details, though not geographical, are necessary to repeat, in order to give an idea of the character and career of the man. Returning to England, he published an excellent account of the Garibaldian campaign, in a volume which had a considerable success. He subsequently visited Iceland, and published an account of his journey; after which he re-entered active service as Commander of the *Curlew* on the River Plate, returning from this cruise just in time to accept the command, under the late Captain Sherard Osborn, of one of the vessels of the Expedition equipped for the service of the Emperor of China. During the Civil War in America he commanded a blockade runner, and performed wonderful feats of skill and daring in this hazardous school of seamanship. The war over, he entered the service of the ill-fated Maximilian in Mexico; and returning to England after the perils and sufferings of this period, he set off, in 1865, on a private venture of his own to Cochin China and Japan. Subsequently he was engaged in mercantile adventure in California and Nevada, and, returning to England, died at his residence in the Albany, on the 12th of May, 1876.

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* 'Proceedings of the Royal Geographical Society,' vol. x. p. 170.

Sir J. W. KAYE, F.R.S.—This eminent official in the Indian Department of our Government was born in 1814, the second son of Mr. Charles Kaye, formerly Solicitor to the Bank of England. He was educated at Eton, whence he proceeded to the Royal Military College at Addiscombe, where he passed through the studies necessary to qualify him for military service in India. He served subsequently for some years as officer in the Bengal Artillery; but his ardent love of literary pursuits led him to resign his commission in 1841, and for some years he devoted himself to literature. In 1856 he entered the Home Civil Service of the East India Company, and when the government of India was transferred to the Crown, he was appointed to the Secretaryship of the Political Department of the India Office, succeeding in this post to Mr. John Stuart Mill. The responsible functions of this office he filled with much credit, until failing health compelled him to retire in 1874. He was created Knight Commander of the Star of India in 1871, and elected a Fellow of the Royal Society in 1866. To the general public he was better known for numerous important historical and biographical works relating to India which flowed from his pen, the most important of which were—'The History of the War in Afghanistan,' 'The History of the Administration of the East India Company,' 'The Life and Correspondence of Lord Metcalfe,' 'A History of the Indian Mutiny,' 'The Life and Correspondence of Sir John Malcolm,' &c. He was elected a Fellow of our Society in 1865, and died on the 26th of July last.

Professor WILLIAM HUGHES.—We have to regret the loss, since our last Obituary was written, of this most industrious and learned

Geographer, who died on the 21st of May, 1876. He was for many years Professor of Geography at King's College, and recently filled also the post of Professor of the same branch of learning at Queen's College. To the general public he was better known as the author of numerous Manuals on the subject which he had made the study of his life, and to the compilation and continued improvement of which, in successive editions, he devoted all the best years of his hard-working, well-spent life. The amount of research and painstaking required in the preparation of such a work as his 'Manual of British Geography' must have been truly prodigious. Manuals compiled with so much industry and conscientiousness could not fail of being appreciated by the public; they therefore gradually made their way into some of our best public schools, and new editions were repeatedly called for, upon the last of which he was working at the time of his death. The following are the titles of some of his chief works:—'Maunder's Treasury of Geography;' 'Principles of Mathematical Geography' (1843); 'Manual of British Geography' (1851); 'Manual of European Geography' (1851); 'Manual of Geography, Physical, Industrial, and Political' (1860); 'The Geography of British History' (1863); 'Treatise on the Construction of Maps' (1864); 'Geography in Relation to History' (1870), &c.

The following Members have been also lost to us by death during the year, many of whom were distinguished in various walks of life, although not known as Geographers: Colonel H. R. Addison, Sir A. Bannerman, G. T. Brooking, Rev. J. Brereton, Francis Buckley, Edwin Brown, T. B. Baker, Edw. Beldam, Dr. L. Cape, H. Cope, C. H. Chambers, H. Collinson, J. Crowdy, Sir Edw. Cunynghame, Bart., J. Dickinson, H. J. Dunell, F. S. Dutton, J. Edward, H. Field, Col. W. F. Grant, I. Gerstenberg, Capt. J. T. Greenfield, Lieut.-Col. F. A. Gould, W. E. Heeley, E. J. Hutchins, A. B. Halloran, T. Hamilton, P. D. Hadow, A. Hector, T. A. Kjaer, G. Kenrick, Dr. R. P. Linton, Dr. A. E. Mackay, T. W. L. Mackean, T. Malby, G. Mathews, Rev. J. Ouvry-North, Capt. Oldfield, W. Phelps, E. C. Ravenshaw, J. Reeve, J. Reynolds, J. V. Shaw, Admiral Swinburne, Sir J. Stuart, Lord Sandhurst, Lord Sudeley, Major P. Swan, Lieut.-Col. G. Thompson, H. Thurburn, C. Verrey, T. Wilson, W. C. Wentworth, and H. Waite.

ADMIRALTY SURVEYS.*—The year since the last Presidential Address has been marked by the return to England and the close of two Expeditions, which have rendered important services for the advancement of Geographical and Hydrographical science. The results of the deep-sea exploring voyage of H.M.S. *Challenger*, and the Expedition for discovery and research in the Arctic regions in H.M.'s ships *Alert* and *Discovery*, have given fresh impulse, and rendered large additions, to several branches of scientific inquiry. Further, the professional skill displayed by the leaders and crews of these Expeditions, in conducting their ships under many hazardous conditions, and with perfect security, will form bright pages in the annals of our naval history.

Admiralty Surveys, both at home and in our Colonies, are with undiminished force making steady progress. Additions to the surveying ships-of-war on foreign service have been made by the appropriation of the steam-corvette *Fawn* and the sailing-schooner *Alacrity*; the former for employment at the outset in the Red Sea and on the Zanzibar Coast, the *Alacrity* for the hydrographic development of the Fiji group and its countless coral reefs.

Notwithstanding these additions to the surveying force of the Hydrographic Department, it is found difficult to keep pace with the demands made in the interests of commerce for marine surveys, both in extension of imperfectly-known coasts, and for greater details to those already accurately charted.

Shores of the United Kingdom.—Staff-Captain Parsons, in H.M.S. *Porcupine*, has been engaged on the shoal-grounds between Yarmouth Roads and Dover; this included a re-examination of the Hewett and Cockle channels. From the continuous movements of the sands in these localities, frequent surveys are required in the interests of shipping. The shoals at the entrance of the River Thames have also undergone examination in extension of Captain Calver's former survey of 1862–3. Shoreham Harbour has also been re-surveyed.

In continuation from the preceding year, the survey of the Solway Firth, from the sea to the end of the navigation at Bowness railway bridge, has been completed by Staff-Commander J. H. Kerr, assisted by Navigating-Lieutenant Langdon. Marked changes in the channels and shoals over the whole area have taken place since the Admiralty Survey of 1837. This officer has also completed a survey of St. Tudwall Bay, a neighbourhood now rendered more available for shelter by the recent admirable marking of its dangers and approaches by lights and buoys, under the direction of the Trinity Corporation.

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* By Captain F. J. O. Evans, C.B., F.R.S., Hydrographer of the Admiralty.

On the east coast of Scotland, the bar of the River Tay has been surveyed in minute detail by Staff-Commander George Stanley, a necessity arising from changes which have taken place since the surveys of 1833 and 1866.

In Ireland, Staff-Commander Hall, with an assistant, has been engaged in surveying the upper part of the River Shannon from Wellesley bridge, Limerick, to Cains Island. Since the Admiralty Survey of 1841, changes have taken place in the bed of this river. The increased draught of ships visiting Limerick since the opening of the floating-dock has further rendered a re-survey on a large scale necessary.

Mediterranean and Red Sea.—Commander Wharton, late of the *Shearwater*, in his newly-commissioned ship the *Fawn*, with a strong staff of young surveying officers, and assisted by Staff-Commander Millard, resumed in the past autumn the examination in detail of the seaboard from the Damietta mouth of the River Nile to Port Said, and also re-sounded that part of its approaches in continuation of the survey of March 1875. In comparing the present condition of the Damietta mouth with that as charted in 1856, it is found that the sand-bars are considerably pushed forward, but retaining more or less of the former shape of the river's mouth; and that there is also a slight advance of the land. The mast of a vessel, wrecked and sunk on the bar about seven years since, is now considerably inside the western point of the river, showing an unusually rapid advance of the coast. Captain Wharton, however, observes that the sand-bars are daily shifting, and that it is probable an unusually heavy winter gale may from time to time wash away the accumulations of many years. Another interesting fact is given by Captain Wharton. At the time of the *Fawn's* visit it was the period of highest Nile. The water issuing from the Damietta mouth is then so charged with matter that it forms a species of breakwater to the shore to leeward, the wind being comparatively powerless to raise it into waves, and the swell coming from the northward being nearly entirely killed by it. When there was a heavy swell of a height of 6 feet from trough to summit outside the line of Nile water, inside this dirty water, and on the bar, no swell of any kind was visible. Locally, this is known as the Mishta season; and advantage is then taken to anchor trading-vessels close to the bar, in no more water than they draw.

With reference to Port Said, the soundings were found more uniform than in any of the previous surveys. This was accounted for by the season of the year. Previous surveys had been made in the spring, before the inequalities scoured out by the winter gales had time to settle. The shore-line at the western breakwater had advanced 105 feet since March 1875, an interval of nineteen months. The shore to the east of the canal-entrance, and near the eastern breakwater, is washing away.

Passing into the Red Sea, Captain Wharton defined some of the outlying dangers in the neighbourhood of the Suakim Islands and the opposite Arabian Coast; made a complete survey of the port of Jiddah, and then commenced the survey of the Massowah channel. This inshore route on the African coast, between the parallels of 15° and 17° N., is likely to be of considerable value. Under-powered and small steam-vessels experience difficulty, and of course detention, in making headway against the strong southerly winds which blow in the central part of the Red Sea south of the 17th N. parallel during the winter months. In the Massowah channel moderate winds and smooth water are experienced; the various islands and headlands on the passage serving as constantly recurring land-marks, and there is anchorage nearly everywhere.

Mauritius.—Although a skilful triangulation had been executed so far back as 1753 by the well-known Abbé de la Caille, and accurate maps of the island exist, the hydrographic features of this valuable colony have hitherto been very imperfectly rendered. It was accordingly arranged, in the interests of modern navigation, that a general plan of the shores should be executed on the scale of one inch to the nautical mile—the soundings being carried out to the 100-fathoms' contour-line—and that plans of the harbours should be made on suitable scales.

Navigating-Lieutenant Coghlan was selected for the duty; and this active and intelligent officer, with very limited appliances, has in the first year completed the survey of the shores of the northern and more important half of the island, with its approaches, together with Port Louis; and has examined also, to some extent, the Grand Port. Lieutenant Coghlan contemplates completing the service afloat by the close of the present year.

Indian Archipelago and China.—The *Nassau*, Commander Napier, with his efficient staff, has broken ground on the seaboard of China, at Haitan Strait and its neighbourhood. The chief mission of this party is to examine in detail the several dangers lying close to the shore, discovered since the excellent preliminary surveys of Kellett and Collinson of the Royal Navy (1840–6), by the hugging of the land during the strength of the north-east monsoon of the numerous large steam-ships engaged in trade between the Treaty Ports.

Prior to taking up this work at the favourable season of the year, Commander Napier made an excellent survey of the Dinding Islands in Malacca Strait, and the intricate channels and anchorages between the larger islands and the mainland; connecting at the same time the mouths of the Perak river with this survey; further taking a line of soundings for telegraph purposes between Penang and Rangoon.

The *Nassau* performed, *en route* to Hong Kong, good service in Carimata Strait by accurately determining the position of several prominent islets and dangers on the southern limits of this highway to the China Sea; adding to the soundings, and charting one more unknown rock in the fair-way of navigation with as little as 9 feet of water over it.

South-West Coast of Korea and Japan.—Captain St. John and his effective staff, in H.M.S. *Sylvia*, have been engaged for some time making an examination of, and connecting trigonometrically, the many groups of islands extending far seaward from the south-west coast of Korea, and lying in the line of direct sea-communication between Japan and the northern ports of China.

Detailed surveys of Murray Sound and the Mackau group in this region were made, and in the latter a good anchorage for moderate-sized vessels was found. This haven (named by Captain St. John after himself) will in time doubtless prove useful to storm-bound mariners. Here, as on the mainland, according to the former experience of the officers of the *Sylvia*, the islanders (Korean) displayed unconcealed dislike to the presence of strangers, and it required both tact and forbearance to avoid open rupture in carrying out the useful service of charting the group.

The northern part of the Goto Islands—westward of Nagasaki—as also the Kuga channel through the central part of the group, have been surveyed in detail by the *Sylvia's* officers.

Newfoundland and Labrador.—The labours of Staff-Commander Maxwell and his party, in the hired steam-vessel *Gulnare*, are still divided between Placentia bay in Newfoundland and the N.E. Labrador coast. The latter can alone be examined in the middle of the summer season. Coast details in continuation of former work has occupied the time, especially the development of Frenchman's Run, a channel of much value to the fishing fleet.

The early and later parts of the season have been spent in charting the West coast of Placentia bay, and the examination of several off-lying shoals, these proving a source of embarrassment to the telegraphic cable arrangements, from their hitherto uncertain position.

Jamaica.—Lieutenant Pullen, with his small party, in a sailing schooner, has completed in continuation a creditable survey of the south coast of the island included between Milk river and Luana point, with the extensive off-lying bank of soundings, and also executed an enlarged plan of the Black River anchorages. This energetic young officer is pushing his survey rapidly to the east end of the island.

Western Australia.—Staff-Commander Archdeacon and his party are steadily working along the inhospitable shores of this colony, triangulating and charting in detail its rugged and broken features. From Swan River southward round Cape Leeuwin, and thence to West Cape Howe, near King George Sound, the coast-line has been completed; the anchorages at Koombanah bay and in Géographe bay sounded over; together with the positions of the dangerous reefs northward of Cape Naturaliste, and the innumerable outlying dangers off the much-dreaded locality of Cape Leeuwin, accurately charted.

The surveying officers report that from Cape Naturaliste to Cape Leeuwin there are only a few scattered settlers; between the last-named cape and West Cape Howe the country near the coast is quite uninhabited, being almost a continuous forest, rendering the carrying out of the survey not only most laborious, but entailing hardships and privations of an unusual character. Staff-Commander Archdeacon and his party deserve much credit for the energy and endurance with which they have overcome so many physical obstacles, and given us at the same time accurate surveys.

South Australia.—Staff-Commander Howard, with two naval assistants, in the hired schooner *Beatrice*, has now completed in continuation the coast from Cape Catastrophe to the northern shores of Streaky bay, with the off-lying soundings.

The broken sea-board of this important colony has therefore (with the exception of about 450 miles in the neighbourhood of the great Australian Bight), now been charted in detail by Admiralty Surveyors.

Victoria.—The detailed survey of Banks Strait has been completed by Staff-Commander H. J. Stanley, cordially assisted by the Victorian Government. In addition, large-scale surveys of Waterhouse anchorage and the Bay of Fires on the Tasmanian coast have been executed.

Queensland.—The surveying party under Staff-Commander Bedwell have during the past year surveyed in comprehensive detail the FitzRoy river from its seaward approaches to the town of Rockhampton: the shoaler portions of the Mary river below Maryborough, over which dredging operations are contemplated; and also the small Noosa river in Laguna bay, north of Brisbane, in lat. 26° 24′ s.

Fiji Islands.—Lieutenant W. U. Moore, in H.M.'s schooner *Alacrity*, has taken up the work among these Islands in succession to Lieutenant Dawson. His early duties were to survey Savu Savu bay in Vanua Levu, as also Nandi bay; both of these localities having been named as favourable sites for the proposed new capital of the Colony. It is now understood that Suva bay, surveyed by Lieutenant Dawson, offers superior advantages, and that the seat of Government will be removed thither from Levuka.

Lieutenant Moore has also completed the examination of Kandavu Island, and its encircling and outlying reefs extending to North rock on Astrolabe reef.

Deep-Sea Exploring Expedition.—In the Address of last year it was announced that the *Challenger's* labours were drawing to a close, and that her arrival in England might be daily expected. The proceedings were then brought up to the re-entry of the ship into the South Atlantic Ocean in January 1876, and the sailing from Monte Video towards the end of February, to complete sectional oceanic observations across to Tristan da Cunha.

In order to preserve a continuous record of the proceedings to those already rendered for the years 1873-4-5-6, the following sketch will bring these to their termination on the arrival of the ship at Spithead, and the paying-off of the *Challenger* and dispersion of her officers and crew in June of last year.

Between Monte Video and Tristan da Cunha twelve soundings with serial temperatures were obtained; making, with similar observations in the track of October 1873, fifteen determinations in this interesting region. In the western half of this traverse—on about the 37th parallel of south latitude—the greatest depth was 2900 fathoms, and a bottom temperature obtained (31° to 31°·5 Fahr.) colder than had been found in any part of the several oceans, except in the immediate neighbourhood of the Antarctic regions. The stratum of water below the temperature of 32°, further had an average height from the bottom of 2400 feet. In the eastern part of the traverse the depths were shallower, 1715 fathoms being the least found, the bottom temperature in this portion rising from 32°·8 to 34°·7.

From Tristan da Cunha deep soundings and temperatures were obtained onward to Ascension, and thence to the Equator; there forming a junction with the position in 3° N., of August 1873, and the deep-sea results of that time. Between the above oceanic islands the depths varied from 2020 fathoms to the comparatively shallower water, 1240 fathoms, and the bottom temperature was in no case so low as 35°. Approaching the Equator from Ascension, the depths increased to 2350 fathoms, and the bottom temperature became colder, it having been recorded as low as 32°·7.

A summary of the work done in the Atlantic Ocean tells us that serial temperatures were obtained at 125 positions, 82 of which were north and 43 south of the Equator. With these incomparable results, aided by the deep-sea sounding labours of the German ship-of-war *Gazelle*, combined with those of earlier American and English navigators—as also the work of the *Valorous* on her homeward voyage from attendance on the Arctic ships to Davis Strait—Staff-Commander Tizard, the Navigating and Chief Surveying officer of the *Challenger*, has constructed a diagram showing on a Mercator's chart the deep basins of the Atlantic Ocean, together with nine sectional diagrams of isothermal lines from the surface downwards, severally arranged in meridional, longitudinal, and diagonal directions; these, with a valuable monograph on Atlantic Ocean temperatures, form the 7th number of a series of Reports on the *Challenger's* proceedings, printed by the Admiralty during the voyage for limited distribution to learned Societies and others interested.

Before closing these brief records of the *Challenger's* labours, it may be of interest to place a few statistical details before the Society. The voyage round the world occupied 3 years and 172 days. The distance traversed was 68,890 miles; the highest southern latitude reached—a region of icebergs and pack-ice—was 66° 40′ S.; and although many intricate seas were traversed, and lands approached which were scarcely known to the navigator, to the professional credit of all concerned the ship not once touched the ground.

To return to the great object of the *Challenger's* voyage: this, as is well known, was to investigate the physical and biological conditions of the great ocean basins. At intervals as nearly uniform as circumstances permitted, throughout the 68,890 miles traversed, 362 observing stations for these purposes were established. At most of these stations, in addition to the determination of the depths and temperatures, a sample of the bottom-water was procured for physical and chemical examination; a fair sample of the bottom-fauna was procured by means of the dredge or tow-net; and the fauna of the surface and of intermediate depths was examined by the use of the tow-net. Special care was taken for the preservation of these records. The collection of invertebrate animals is of great extent; and from most of the species being, it is understood, undescribed—and from the great peculiarity of the distribution of the fauna of the deep sea—this branch of inquiry, it is expected, will yield most interesting results.

The necessary investigations, and the preparation of a scientific account of the voyage, have been confided by Her Majesty's Government to Professor Sir Wyville Thomson, Chief of the Civilian Scientific Staff of the Expedition. This account, as estimated by Sir Wyville, will probably consist of a series of volumes, of which two will be devoted to a general description of the voyage, with such hydrographical details as may be necessary for the clear comprehension of the scientific observations, and to a full discussion of the general results, physical and biological; one volume to contain an account of the physical and chemical observations, with a special discussion thereon; and a further series of volumes (probably not less than six in number) containing a detailed account of the fauna, with plates illustrating the undescribed or imperfectly known forms.

Miscellaneous.—In addition to much useful Hydrographic information received during the year from officers of the Navy in different parts of the world, several commanding officers of the Mercantile Marine have contributed to our knowledge of the shores of China and Japan. Messrs. T. E. Cocker, of the Chinese gunboat *Ling Feng;* J. C. Pendered, of the Japanese Government steamer *Thabor;* E. M. Edmonds, of the Peninsular and Oriental Company's steamer *Malacca;* and G. C. Anderson, of the steam-ship *Conquest*, deserve for their contributions special mention; their labours have been, or are, in course of publication. Sir Allen Young, and the officers of the Arctic yacht *Pandora*, extended our knowledge of the shores and anchorages at the entrance to Smith Sound.

Among other additions to Hydrography in the past year has been the discovery in the Atlantic Ocean of a comparatively shallow bank of soundings surrounded by ocean depths, 130 miles to the westward of Cape St. Vincent, in Spain. This was effected in the United States ship *Gettysburg*, Commander Gorringe, while engaged in carrying a line of deep-sea soundings, for telegraphic purposes, between Gibraltar and the Azores. Stormy weather and the advanced season prevented Commander Gorringe from making a full examination of the shoal area. The least depth obtained by this officer was 30 fathoms; but he was impressed with the belief that shoaler water would be found, and possibly that spots might exist dangerous to navigation. With this uncertainty pending, and the bank lying in the direct track between Lisbon and Madeira, the Admiralty caused an extended examination in March of this year to be made by H.M.S. *Salamis*, Commander F. W. Egerton, the despatch vessel attached to the Channel Squadron. This officer closely sounded the shoal-area by boats, finding not less than 30 fathoms; the *Salamis*, at anchor during the time of springs, found the tides setting regularly to the north-east and south-west at the rate of 1½ mile per hour; abundance of fish were caught. The shape and area of the bank included in depths less than 100 fathoms is nearly circular, with a diameter of about 5 miles, and is situated between the parallels of 36° 29½′ N. and 36° 34½′ N.

The shoalest part, within the depths of 35 to 30 fathoms, appears to be a narrow ridge 2 miles in extent, running nearly east and west: the least depth of 30 fathoms being confined to a small patch in lat. 36° 31½′ N., and long. 11° 35½′ W.

The nature of the bottom at depths less than 50 fathoms was found to consist of rock and coralline matter; in depths exceeding 50 fathoms, pebbles, coralline substances, shells, and sand.

Beyond the depth of 100 fathoms the soundings increase rapidly. The depth of 1000 fathoms from the shoal-ground being about 5 miles in a northerly direction; 6 miles in a southerly; 13 miles to the westward; and 11 miles to the eastward. At 20 miles distant in a north-westerly direction, 2750 fathoms were found, and in a north-easterly direction 1640 fathoms.

Summary.—The Notices to Mariners on subjects of immediate interest, such as the institution of new lights or alterations in old-established ones—similarly also with buoys and beacons—and especially the discoveries of new rocks or dangers, engage earnest attention: 167 of these notices, and 350 octavo pages of new hydrographic information of a less urgent nature, were issued during the past year,

Five volumes of sailing directions—including the second volume of the 'Mediterranean Pilot;' a second edition of 'Directions for the Dardanelles, Sea of Marmara, and the Bosphorus;' second edition of 'West Coast of Scotland,' Part II.; and 7th edition of Vol. I. of the 'Australia Directory,' have also been published.

In the chart branch, 62 new charts have been published, and 1896 charts have undergone correction; 180,000 copies have been printed for the general public and for the use of the Royal Navy.

ARCTIC REGIONS—*The Expedition of* 1875-6.—The chief event in connection with our Society since the last Anniversary Meeting has undoubtedly been the return of the Arctic Expedition, under Captain Sir George Nares. The largest Meeting of the Session was that which assembled to welcome the Commander and officers of the *Alert* and *Discovery*; and we have this day sealed our approval of the geographical work accomplished by the Expedition, by conferring on its leader the highest honour we have it in our power to bestow. Having borne testimony in this emphatic manner to the value of the results achieved, it will be proper in this place to review briefly the connection of our Society with this great Expedition, and to show from the expectations our Council always entertained and expressed, that the objects have been in a great measure attained.

The Council have always thought that the objects of Arctic exploration, in these days, must be to secure useful scientific results in Geography, by exploring the coast-lines, and ascertaining the conditions of land and sea within the unknown area left unexplored by all previous Expeditions. We have also dwelt specially upon the importance of encouraging a spirit of maritime enterprise, and of giving worthy employment to the navy in time of peace—a truly national object, and one which, as the result proved, had as much influence in forming the decision of statesmen as the scientific results. It was with these views that Sherard Osborn, on the 23rd of January, 1865, read his first Paper at a Meeting of the Society, on the exploration of the North Polar Region. His proposal was that two steamers should be despatched to Smith Sound: that one should winter near Cape Isabella; that the other should press up the western shore as far as possible; and that in the following spring, sledge operations should be directed over the unknown area. And again, in his Paper read April 22nd, 1872, he advocated the same route and a similar plan.

In consequence of this latter Paper, a Committee was appointed by the Council of the Geographical Society to consider the best means of bringing the subject before the Government: consisting of Sir George Back, Admiral Collinson, Admiral Ommanney, Admiral Richards, Sir Leopold McClintock, Captain Sherard Osborn, Dr. Rae, Mr. Findlay, and Mr. Markham. The Report of this Committee was unanimously adopted by the Council of the Society, on the 29th of April, 1872; and in the spring of 1873—the Royal Society having accepted our invitation to co-operate in these preliminaries—a joint Committee of the Royal and our own Society was appointed to prepare a Memorandum on the scientific results to be derived from the proposed Expedition. This Committee was composed of the same members as sat on the Arctic Committee of 1872, for the Geographical Society; and of Dr. Hooker, Mr. Busk, Mr. Prestwich, Dr. Carpenter, Dr. Allman, Mr. Evans, General Strachey, and Mr. Fergusson, for the Royal Society. In this Memorandum, dated June 1873, which was widely distributed, the scientific results were fully discussed in a series of paragraphs furnished by Dr. Hooker, Professor Allman, Mr. Prestwich, General Strachey, and Professor Newton; while the arguments derived from former experience and general policy were by Sherard Osborn.

On the 1st of August, 1874, Sir Henry Rawlinson and Admiral Sherard Osborn, accompanied by Dr. Hooker, had a very satisfactory interview with Mr. Disraeli, and on the 17th of November the Prime Minister addressed his well-known letter to Sir Henry Rawlinson, announcing that Her Majesty's Government had determined to lose no time in organising a suitable Expedition.

It is important that the objects of the Geographical Society in pressing this undertaking upon the Government should be kept in mind. The Council, in all its memoranda, abstained from setting forth the attainment of the highest possible northern latitude, and an attempt to reach the North Pole, as the main object of an Arctic Expedition. The object held steadily in view was the exploration of the largest area possible of the unknown region from a fixed base of operations, in order to secure useful scientific results. The course advocated was to navigate along a coast-line, to include the passing of at least one Arctic winter in the scheme, and to look to sledge-travelling as the main instrument of discovery and exploration. Consequently the Smith Sound route was, for the attainment of the above objects in accordance with these rules, the best that could be selected.

The Arctic Expedition returned in October 1876, after having succeeded in crossing the threshold of the unknown region by the Smith Sound route, established a base of operations beyond it, and explored the unknown area from the base to the utmost extent possible with the means at their disposal. As far as popular objects were concerned, the *Alert* had reached the highest north latitude ever attained by any ship; she had wintered farther north than any ship had previously wintered, and Captain Markham had reached 83° 20′ 26″ N., a point nearer the North Pole than any human being had ever been before.

As regards geographical discovery and research, the results of the Arctic Expedition are recorded in the exhaustive Report of Sir George Nares, presented to Parliament, and in the two Papers he has read at Meetings of the Society, on December 12th, 1876, and March 26th, 1877. The Parliamentary Report, together with the copious details, illustrated by charts and sketches, relating to the sledge journeys, leaves nothing to be desired on the part of the geographer—nor, indeed, of the general reader—as descriptive of discoveries made of advanced Polar lands, of the energy, perseverance, and endurance displayed by officers and men on the several explorations, frequently under difficulties and hardships of the gravest character. And especially do these records show the bold and skilful manner in which the ships of the Expedition were conducted—the leading vessel to the highest latitude yet attained, and probably possible of attainment, by keel—and their safe return home from the hazards of ice navigation of no ordinary character, even for Arctic seas, with all appliances intact, and without accident to vessels or crews. It was found that the coast lines beyond Robeson Channel trended away to west and north-east, forming the shores of a frozen Polar Sea, and from the base of operations formed by the *Alert* in 82° 27′ N. the members of the Expedition examined the coasts for a distance of 300 miles. Along the whole of this distance the ice of the Polar Sea was of the same character. Its existence was an unexpected and important discovery. This ice was found to be from 80 to 100 feet in thickness, formed by continual additions from above (due to the annual snow-falls), which, by the increasing superincumbent weight, is gradually converted into snow-ice. Complete sections of the huge masses forced upon the shore were carefully taken, and they show the way in which the whole is formed, as well as its great age. These masses had been broken off from the large floes of ice, and were grounded in from 4 to 10 fathoms along the whole coast. The process of formation of the ancient floes resembles that of glaciers, and the masses thus grounded had been chipped off from them. They in no way resemble the mere piles of broken-up hummocks that are often found on other Arctic shores. They are, in fact, icebergs broken off from fragments of floating glaciers, and have therefore received the appropriate name of FLOE-BERGS.

The *Alert*, in September 1875, had thus reached an impenetrable sea of ancient ice, intervening between those lonely shores and the North Pole. It is not, however, one vast congealed mass never in motion, which would have been the case if it had been formed in a stagnant and confined sea. On the contrary, it is subjected to annual disruption, and to violent commotion during the summer months. Early in July the whole mass is in motion, driving backwards and forwards with the winds and currents, its main course being towards the east. The floes grind against each other and are broken in fragments, while, whenever the angular corners of any of the fields meet, there pools of water are formed. In September the frost sets in, and these pools and narrow lanes are frozen over with ice that becomes about 6 feet thick during the winter, but motion still continues, and ridges of hummocks are thrown up between the floes. The stillness of the Polar winter does not prevail until late in October or November. Then a new formation of ice commences, and goes on for seven months, which far more than counterbalances the decay during the summer.

Such is the nature of the great Polar Sea beyond the channels leading from Smith Sound, which was discovered by the Arctic Expedition of 1875–76. It is so totally different from the Polar pack met with north of Spitzbergen, that, with a view to that precision without which Physical Geography cannot make progress as a science, it was necessary that some distinctive term should be applied to it. This portion of the Polar Ocean was therefore named the PALÆOCRYSTIC SEA, or sea of ancient ice: a name which has now been adopted by geographers, both in England and on the Continent.

Careful and diligent observation furnished some *data* by which a judgment might be formed of the probable extent of the Palæocrystic Sea. It is certain that land was not near to the north, because hills were ascended to a height of 1500 feet and upwards on clear days, and there was not a sign of land. But there are other considerations all tending to the same conclusion. There are no flights of birds to the north, which certainly would be the case if there was land; and the only living thing that was seen on the Palæocrystic Sea, by the northern division of sledges, was a little snow-bunting that had strayed from the nearest shore. Further evidence is furnished by the fact that animal marine life almost ceases to exist in the ice-covered Polar Sea. The Palæocrystic Sea is a sea of solitude.

The great extent of this Polar Ocean is assumed on the above grounds. There is also evidence that it is a comparatively shallow sea. The northern division of sledges, at a distance of forty miles from the land, found bottom in only 72 fathoms; and between that point and the shore several huge floe-bergs were observed, apparently rising out of the centres of floes, which were probably aground. Another indication of the present shallowness of the Polar Sea is the general recent upheaval of the adjacent land. Drift wood was found far above any point to which it could have been carried by ice or water.

As regards the distribution of land and sea within the unknown area, and its general hydrography, the discoveries of the Expedition are important. And it usually happens that when a new geographical fact is revealed, through the labours of scientific explorers, it is found that it harmonizes with other isolated pieces of knowledge which previously stood alone, as it were, and were not intelligible without it; the geographical and hydrographical results of the Expedition are also most important, because they have a practical bearing on the general system of oceanic currents and of meteorology, and consequently form an essential part of a vast whole. Without a knowledge of the hydrography of the Polar Region, all the general theories of oceanic currents must be incomplete; and Arctic research is, therefore, necessary to a science which is of practical utility. But the Expedition brought home other results, which are certainly not less interesting than those discoveries which immediately concern the Geographical Society. Among these may be mentioned the examination into the geological formation of the whole coast line on the west side of the Smith Sound channels from Cape Isabella to Cape Union, as well as of the shores of the Palæocrystic Sea on either side of Robeson Channel. Collections of rocks and fossils were made at every point, including a very complete Upper Silurian series, and the mountain limestone shells and corals of Cape Joseph Henry. But by far the most important geological discovery was that relating to the existence of tertiary coal in 82° N., and the former extension of miocene vegetation to that parallel. The Expedition also made an exhaustive collection of the biology of a region previously almost entirely unknown to science: the region north of the 82nd parallel, as distinguished from the Arctic countries to the southward. The whole *flora* of the new region has been brought home; and it must be remembered that meagre though this *flora* certainly is, Dr. Hooker has shown that it possesses special interest in connection with the remarkable distribution of American and Scandinavian plants. The zoology of the newly-discovered region has also been exhaustively examined, and very complete collections made as regards mammalia, birds, fishes, insects, molluscs, crustacea, echinoderms, and a vast number of microscopic forms. In physics a complete series of meteorological, magnetic, tidal and other observations, covering a year, has been taken at two stations.

As regards the conduct and management of the Expedition which secured these valuable results, the most essential object, and the crucial test of its success, is the attainment of a position as a base of operations beyond any hitherto discovered. To have brought a ship through the difficult channels leading north from Smith Sound, and to have found winter quarters on the open and exposed coast of the Palæocrystic Sea, protected only by grounded floe-bergs which might at any time be driven higher up or swept away, was in itself a great success. No other Arctic navigator ever forced his ships through such obstacles, and brought them safely back again; and this establishment of a base of operations within the unknown region called forth all the highest qualities of a commander—incessant watchfulness, great presence of mind, rapid yet cautious decision, and consummate seamanship.

Next to the establishment of a base of operations beyond any point previously reached, the most important preparation for exploration and discovery by sledges is the management of the Expedition during the long darkness of an Arctic winter, and the maintenance of the health and spirits of the men. The difficulties, in this respect, of the Expedition of 1875-76, were greater than any that had previously been encountered, because the winter was the longest and the most severe, and the continuous darkness was the most prolonged that had ever been endured in the Arctic Regions. Moreover, the absence of the warming apparatus supplied to former Expeditions increased the difficulty of preserving health. When these special disadvantages are considered, the efforts of the commanding officers of the late Expedition to preserve the health and keep up the spirits of the men are deserving of high praise. When the sun returned, the scheme for exploration by sledges was matured; and early in April 1876, under difficulties, and exposed to an extremity of cold beyond anything that had been experienced in former expeditions, the sledging parties left the ships.

Owing to the Admiralty Instructions, it was incumbent upon Captain Nares to push his principal party due north over the Palæocrystic Sea, with the object of attaining the highest possible northern latitude. As there was no land, it was not possible to lay out depôts, and all supplies, together with boats, had to be dragged on the sledges. The Admiralty had impressed upon Captain Nares (para. 15 of 'Instructions') that, in the absence of continuous land, sledge travelling for any considerable distance has never been found practicable. Yet, in order to attain the main object of the Admiralty, the attempt had to be made. The farthest north hitherto reached was on July 23rd, 1827, when Parry got to 82° 45′ N. But this was during the summer, and the work was done without the endurance of serious hardships, although the weights to be dragged per man were very great, namely 268 lbs. Captain Markham won the palm from Parry after he had held it for nearly forty-nine years. On May 12th, 1876, he reached 83° 20′ 26″ N., in the face of hardships and difficulties without a parallel in the annals of Arctic sledge-travelling. For this great exploit our Council have awarded him, as you have already learnt, a special honorary testimonial.

Three other extended sledge parties were organized to secure the true objects of the Expedition, from the point of view of our Society, namely, the extension of geographical knowledge. One was to explore the unknown region to the westward of the base of operations to the farthest point attainable; the second was to press eastward along the northern coast of Greenland; and the third was to examine the deep inlet named after Lady Franklin, which was believed to be a strait. All did their work admirably, and extended their explorations to the utmost limit, in two sad cases beyond the utmost limit, of human endurance. They fully, completely, and with heroic self-devotion, fulfilled the objects which our Arctic Committee had prescribed, by exploring that portion of the unknown region accessible by the Smith Sound route to the farthest extent possible with the means at their disposal.

Expeditions to the Obi and Yenisei.—With regard to other parts of the Arctic regions, it is interesting to record the considerable additions that have been made during the past season to our knowledge of the estuaries of the Obi and Yenisei, and the neighbouring parts of the Kara Sea, by German and Swedish expeditions. The latter, under the leadership of the celebrated Arctic Explorer, Dr. Nordenskiöld, succeeded, as in the previous summer, in reaching the estuary of the Yenisei. The German party, consisting of Messrs. Finsch, Brehm and Zeil, equipped by the German North Polar Exploration Society, devoted itself to the examination of the isthmus separating the Bay of Kara from the River Obi. It had been previously stated by Captain Wiggins, who has devoted himself with great zeal and intrepidity to the exploration of a trade-route by sea to the Obi, that a practicable road might be found, by means of tributary streams, across this neck of land, thus materially facilitating the approach to the Russian trading centres in North-Western Siberia. The exploration last summer by the German *savans* abovenamed has, however, set this matter at rest for the present. Descending the Obi to Obdorsk, they made a gallant attempt to traverse the neck of land separating that part of the river from Kara Bay: the small rivers were navigated, with much difficulty, to their headwaters, and sledges were then employed in traversing the desert Tundra; but they were unable to reach the shores of the bay, and were obliged to return. The canalisation of the isthmus they consider impracticable.

Russian Explorations.—The attempts to unite Western Siberia with Europe by the navigation of the Glacial Ocean form one of the chief geographical undertakings in Russia during the past year. But although the achievements of the Russian explorers, as well as those of Nordenskiöld and Wiggins, will enrich science by many valuable discoveries and interesting communications, it is doubtful whether they will, at all events for some time to come, be productive of real advantage to the country itself. And this may be said with equal truth of the recent relations between Western Siberia and China, undertaken with the view of establishing commercial intercourse with the inner provinces of the Celestial Empire. The Expedition of Lieutenant-Colonel Sosnoffsky left Kiakhta with the purpose, amongst others, of exploring the trade-routes from the tea-plantations to the Russian frontier on the Black Irtish. It succeeded in accomplishing its difficult journey, and proceeded from Kiakhta to Peking, Shanghai, and Hankow, passing through the Great Wall by the westernmost gate, and returning across Mongolia to the Zaisan district. But when, shortly afterwards, a caravan, laden chiefly with corn for the Chinese troops, escorted by some Cossacks, was despatched in accordance with the promise of Tso, Governor of the provinces of Shen-si and Kan-su, the Chinese Government, in spite of its promises, and influenced by its usual suspicions, refused the Russian merchants admission to the provinces of Inner China. On this side, therefore, Russian trade cannot penetrate beyond Mongolia, where, at all events, it has not to compete with English goods.

But the question of laying a railroad to Siberia has made more progress, and a line starting from Nijny Novgorod, on the Volga, to Tiumèn, on the Tura, has been, in principle, decided on. We have recently learnt, also, that the Emperor has finally sanctioned the construction of a line of railway from Orenburg to Tashkend—a great work long talked of, which, taking a circuitous course to avoid the steppe, will extend to a length of 1200 miles. On the other hand, internal communications, such as the construction of roads over the mountains to the frontiers of China and improving the navigability of rivers, have hitherto been unsuccessful, owing to the want of trained engineers. It is to this want of trained specialists in all branches of industry, no less than by the large number of its convict population, that the development of so rich a country as Western Siberia has been chiefly retarded.

While on the subject of Siberia, I would add a few remarks to those which have appeared in previous Addresses* on the late Mr. Chekanoffsky's Expedition to the basins of the Yenisei and Lena rivers. From a sketch of the geographical labours of this enterprising and gifted explorer, who was removed by death while the results of his three years' travels were still in course of publication, I learn that the scientific results comprise, in the first place, 108 astronomical, and 57 magnetic observations; secondly, the cartography of regions hitherto comparatively unknown, viz. the great lake system between 67° and 69° N. lat.; the highlands, including parts of the basins of the Olonek, Vilui, Nijny Tunguska, and

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* See vols. xliv. xlv. and xlvi. 'Journal of the Royal Geographical Society.'

Hatanga rivers; and lastly, the whole of the Olonek system, and the region to the east of the Lena. And in a precisely similar way localities, concerning which we already possessed more information, are represented in an entirely different light: for instance, the Lena is now for the first time described in full detail; Lake Surung, together with the whole of the Vilui region, as well as the great bend of the Nijny [Lower] Tunguska, were 4 degrees of longitude out of their right position on our maps; and lastly, the earlier surveys of part of the Verkny [Upper] Tunguska, for an extent of 400 versts, were fully 70 compass degrees out of their proper bearings.

But Chekanoffsky's chief object was geology, and in his sketch of the composition of the strata along his line of route he shows that the River Nijny Tunguska, for some distance, flows through Silurian strata, and these are evidently associated with Devonian, and for a considerable distance with the Red Sandstone. Further down, this river flows through trap-rocks, its channel lying for a distance of about 1800 versts (1200 miles) through this igneous formation; but other strata occur with it, containing in some places coal, in others graphite, and these probably belong to the carboniferous measures, as indicated by the vegetable remains found in them. On approaching the Olonek, the trap-rocks still predominate, but before reaching the river, they give place in their turn to the Silurian, here unassociated with Devonian series. These occupy the whole extent of the Olonek Valley to the utmost limits of tree-growth. The valley of the Lena in its upper half is geologically composed of the same Silurian and Red Sandstone strata as are found on the upper course of the Nijny Tunguska. But in its lower half the Mesozoic formations are developed, extending northwards to the shores of the Glacial Sea. The most valuable results of these explorations are in Chekanoffsky's opinion the following:—1. The discovery of an hitherto unknown region of eruptive rocks of vast extent, exceeding any hitherto known, and continuing through 6° of latitude and 15° of longitude. 2. The acquisition of new stratigraphical and palæontological facts to determine the question of the age of the Red Sandstone, a question more debated than any other connected with the geology of Eastern Siberia; and 3. The determination of the age of the Mesozoic formations of Northern Siberia. But Chekanoffsky also formed valuable collections of animals and plants characteristic of the great tundras, besides making a vocabulary of the language of their Tunguz inhabitants, and these results entitle him to rank as a worthy successor of Middendorf, who alone among men of science had traversed this region on his way to the distant North.

I have to record another loss among Russian Geographers in the untimely death at Vienna, on the 16th of April of this year, of M. Barbot de Marny, whose extensive travels in Central Asia have greatly contributed to extend our knowledge of the geology of the Aralo-Caspian basin, and especially of the region of the Amu-daria.

Barbot de Marny enjoyed a world-wide reputation as a geologist. He worthily supplemented, and in some degree amended, the works of Murchison, Verneuil and Count Keyserling, particularly in the north-east and south of European Russia, and his "Sarmatische Stufe" of Southern Russia will remain a lasting memorial of his learning and scientific attainments.

I learn from Petermann's 'Mittheilungen' that among the most recent additions to the already large mass of information on the Geography of the Pamir is a map drawn by Jehandar Khan,* the deposed ruler of Badakhshan, containing an itinerary from Ush in Khokand, across the Alai Plateau and trans-Alai Mountains, to Lake Kara-Kul, thence in a south-westerly direction to Shighnan (Shaghnán), passing through Vomar and Bir-pandj on the Oxus, before turning towards Chitral *viâ* Wakhan and Yassin. Another itinerary on the same map leads from Hissar *viâ* Kolab to Faizabad.

Another interesting itinerary, communicated by Mr. Veniukoff to the Russian Geographical Society, is from Aksu, in Eastern Turkistan, to Ladak. It is divided into 49 marches, making in all 1328 versts (about 885 miles). This itinerary was found in the archives at Omsk, and refers back to the year 1824.

Of more general interest is a Memoir by J. Moushkétoff on volcanoes in Central Asia.† The author reviews the earlier authorities on the subject contained in Carl Ritter's 'Erdkunde' and Humboldt's later writings, and after comparing these with his own observations on the Ili basin, concludes by denying the existence of active volcanoes in Asia, although he admits the occurrence of extinct volcanoes, such as Pe-shan, north of Kucha, and another north of Kashgar, recently discovered by the late lamented Mr.

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* This chief is mentioned in Col. Montgomerie's report of a Havildar's journey through Chitral to Faizabad, in 1870. See 'Journal of the Royal Geographical Society,' vol. xlii.

† 'Bulletin de l'Academie Impériale des Sciences de St. Petersbourg.'

Stoliczka. Amongst other geographical undertakings of Russia in Asia, I can only briefly refer to Captain Pevtsoff's astronomical and barometrical observations along the caravan routes from Port Zaisan to the Chinese town of Guchen; Potanin's explorations in the south-west spurs of the Altai, and the region around Kobdo; and Kostenko's reconnaissance in the Pamir, where Sir Douglas Forsyth and his party have done such good service in the cause of geographical research and exploration. Lastly, I would mention that Colonel Prejevalsky is reported to have succeeded in reaching Lob-nor, and to be exploring the mountains to the south of this lake. It is anticipated that he will return early in July, and we may then look for some interesting particulars of a region never before visited by modern European traveller.

The well-known philologist, Hunfalvy de Meo Koveshd, is at present travelling in Turkistan for the purpose of anthropological studies. Mr. Voiékoff has communicated particulars of his travels in Japan in 1876, and Mr. Miklukho Maklay sends another, and a last instalment of his notes on New Guinea.

Two new scientific Expeditions, as Mr. E. Delmar Morgan (to whom I am indebted for this account of Russian Exploration) informs me, will probably shortly be organised by the Russian Geographical Society: the first, under Mr. Mainoff, will study the Finnish tribes living on the Volga; and the second is intended to explore the water-communications of Siberia, with the view of ascertaining the feasibility of opening a direct water-way between North-Western China and European Russia by Lake Baikal, the Angara, the Yenisei, the Ket, the Ob, and the Tobol.

INDIA.—*Indian Surveys.*—The first Report of the new Department of Indian Marine Surveys has been submitted by the Superintendent, Commander A. D. Taylor, late I.N., and has been deemed of sufficient importance and interest to warrant its being reprinted in this country as a Parliamentary Paper. The Report touches upon the period of absolute inactivity in Coast-surveying which succeeded the abolition of the Indian Navy in 1861. For ten years the wants of the Mercantile Marine frequenting the Indian ports were neglected by the discontinuance of those surveying operations, which had been one of the chief functions of the Indian Navy. In 1871, Mr. Clements R. Markham, C.B., our Secretary, drew the attention of the Duke of Argyll, then Secretary of State for India, to the pressing need of some organized agency for providing for this end. The fact was, that since the execution of the surveys then in use, many of which dated from thirty to fifty years back, extraordinary changes had taken place in the configuration of the coast; lights, buoys, and beacons had been erected; and ports, of little or no importance then, had become regularly open to commerce. Many of the surveys of a century before had been mere preliminary examinations not to be compared with the rigorous Royal Navy surveys of the present day, carried out with steam-boats and trained officers.

After some delay, the Government finally took up the question in 1873, and requested that Commander Taylor should be deputed to India to advise them on the subject. It was on the 16th of July, 1874, that official sanction was given for the formation of the new Department called "The Marine Survey Department." Commander A. D. Taylor, late I.N., was created Superintendent, and six experienced Navigating Officers of the Royal Navy were lent by the Admiralty for service under him. Besides these, a few officers of the Bengal and Bombay Marines were engaged in India, and an experienced official of the Admiralty Hydrographic Office was created Superintendent of the Drawing and Compiling Branch.

The chief surveys executed by the new Department up to the end of 1876 comprise the following:—Kolachel Harbour and the Enciam Rocks in Travancore, Coconada Bay and the lower part of the Hooghly River, including the James and Mary Shoals, the approaches of the Rangoon River, Akyab Port and False Point anchorage. The Department sustained an unfortunate loss by the death of one of its Royal Navy surveyors, Lieutenant C. George, a young officer of promise, and son of Staff-Commander George, R.N., our Map Curator. During the spring of 1876, Commander Taylor made a tour of inspection along the Burmese coast, which resulted in the detection of many errors in the existing chart, and in a determination to have the important port of Amherst properly surveyed at the earliest opportunity. A valuable list of light-houses and light-vessels along the coast of British India has been compiled on the model of the Admiralty List; and Commander Taylor's Department has further proved its usefulness by rendering advice to Government on a variety of marine subjects.

The Great Trigonometrical Survey of India completed during the years 1875–6 an out-turn of 4182 square miles, while an area of some 9000 square miles was covered by secondary triangulation, 3500 square miles of it being closely covered with points for the topographical surveyor. Topographical operations by the same departments have been conducted in Dehra Dun, including the Siwalik Hills, and Jaunsar Bawar, Kattywar and Guzerat; and the area achieved has been 1047 square miles on the scale of 4 inches to the mile, and 3629 square miles on the scale of 2 inches to the mile. Three separate surveys have been brought to completion; these being the Jodhpur Meridional series of principal triangles on the meridian of 72½, running through the Jodhpur, Jesalmir and Bikanir States of Râjputana and Bhawalpur; the topographical survey of the beautiful valley of Dehra Dun, including its outlying subdivision of Jaunsar Bawar and the Siwalikh Hills; and the Ceylon Connecting Series, by means of which complete unity can now be introduced between the Surveys of Ceylon and India, and through which the recent telegraphic measurements in uniting India and Greenwich longitudinally will have established a similar connection for Ceylon. Spirit-levelling operations, chiefly in Cutch and Kattywar, have been carried over 421 linear miles, and three stations for tidal observations on the north shore of the Gulf of Kutch have been connected by levels; the result of the determination being to indicate that the mean sea-level stands progressively higher, as the tidal station is removed from the open-sea further up the Gulf. The usual activity has been shown in the computations and publications of the Department, the general Report of which has been issued by Mr. J. B. N. Hennessey, M.A., F.R.S., who officiated as Superintendent during the absence on furlough of Colonel J. T. Walker, R.E., F.R.S.

In connection with the foregoing should be mentioned the retirement from the service of Colonel T. G. Montgomerie, R.E., F.R.S., late Deputy-Superintendent of the Great Trigonometrical Survey, who, as a Gold Medallist of this Society, has a peculiar claim on our notice. Colonel Montgomerie's service in the Department, from the date of his entry thereinto in 1852, has been one of signal usefulness, and his labours in connection with the successful trans-frontier explorations, conducted by natives trained under his eye, will always be remembered.

In the Indian Topographical Surveys Section, nine parties were at work during the year 1876–77, and a highly satisfactory out-turn of 19,188 square miles was achieved, this being principally on the 1-inch scale. Two of the parties broke ground in the State of Mysore, where accurate surveys have for some time past been needed. The large reductions which have been recently sanctioned in the Survey Department have already begun to have their effect in preparations for the absorption of two topographical parties during the present year; while in the Revenue Survey branch, eleven parties instead of fourteen have been employed during the season 1876–77, which is just coming to an end. The Government contemplate in this manner to bring the estimates of the whole Survey Department eventually down to 20 instead of 24 lakhs of rupees per annum.

In the Compiling and Engraving branches of the Surveyor-General's office progress has been made in the preparation of general maps of India, the Lower Provinces, Sind, Oudh and Assam. A map of Baluchistan, on the scale of 16 miles to an inch, has been published, and a new map of the countries between Hindustan and the Caspian Sea, on the scale of 64 miles to an inch, is under preparation. The natives employed on hill-etching continue to progress, but require the constant help and supervision of the European staff, a state of things which causes great delays in the work of the latter.

The total number of parties engaged on Revenue Surveys amounted to 17, and the total area surveyed was 11,175 square miles, on scales varying between 32 and 2 inches to a mile. Strenuous endeavours have been made to utilise the maps of the Bombay Settlement Surveys for incorporation as far as possible in the Topographical Survey-sheets, but, up to the present, the results have proved failures, owing to the great inaccuracy of the former.

A very interesting index-map has been published by the Surveyor General of India in his Report, showing the progress hitherto made by the different branches of the Survey Department towards the completion of a first survey of all India. Rajputana, Nepal, the North-West Provinces, the Konkans, and the whole Southern half of the peninsula are still conspicuously blank, but it must not be forgotten, that though not strictly and scientifically accurate, Atlas-sheets of these provinces *are* in existence. Indeed, the activity and energy with which the survey of our great Indian Empire has been pushed on for many years by the present accomplished head of the Department, deserves the warm recognition of geographers.

Trans-Himalayan Explorations.—"The Havildar," whose former remarkable journey into Badakshan, in 1870, was recorded by my predecessor in the Address for 1872, has been again engaged in making a similar route-survey from Kabul to Bokhara. He left Peshawur on the 19th of September, 1873, with two companions, travelling in the disguise of a merchant, with about 300*l.* worth of muslins and cloths. Leaving Kabul on the 3rd of November, and crossing into Badakshan by the Sar-ulang Pass, about 12,000 feet above the sea, he arrived on the 19th at Faizabad, the modern capital of Badakshan, where he passed the winter. On the 19th of April, 1874, he set out from Faizabad with a stock of *churrus* (an intoxicating drug made from the hemp-flower) for sale, and reached the left bank of the Oxus, where he crossed the river on a raft made of inflated skins, the stream being 600 paces wide. The Oxus here separates the dominions of the Amir of Bokhara from those of the Amir of Afghanistan, and from this point upwards it is generally known as the Punjah. Next day the Havildar arrived at Kolab, a city of 600 houses, where he remained until the 25th of May. He then travelled along the right bank of the river into Darwaz, and arrived at Kila Yaz Ghulam, the frontier village of that little state, on the 9th of July. He was told that, from this point, one long day's journey would have brought him into Shighnan; but he was recalled by the ruler of Darwaz, and detained at its chief town of Wanj for three weeks. He was then told that he would not be allowed to continue his journey, but must return to Kolab; he consequently went back to Faizabad, and thence, by Balkh and Bamian, to Kabul, reaching Peshawur on the 11th of January, 1875.

Another of the native explorers, trained by the Trigonometrical Survey Department, a native of Peshawur, surnamed "the Mullah," accompanied the Havildar as far as Jalalabad, on his outward journey. He is described as a well-educated man, skilled in Arabic, and able, in his capacity of Mullah, to travel unquestioned in such dangerous districts as Swat and Chitral. He left Jalalabad on the 28th of September, 1873, crossed the Kabul River, and proceeded up the valley of the Kunar, of which he has given a very valuable description. He reached Chitral on the 31st of October, passing the winter there. On the 22nd of March he set out for the Baroghil Pass, which is believed to be the lowest depression in the chain that separates India and Afghanistan from Northern Asia. This pass forms the water-parting between the Sarhadd and Chitral Rivers; the Mullah crossed it, and reached Sarhadd, in Wakhan, on the 8th of May, 1874. He then proceeded over the Little Pamir to Tashkurghan and Yarkand, and so by the Karakorum Pass to Leh. He merely made a route-survey with compass, without attempting observations for latitude or height above the sea, as detection would have been a most serious matter.

These two journeys, performed by "the Havildar" and "the Mullah," were complements of the work achieved by Captain H. Trotter, R.E., of the Great Trigonometrical Survey, who accompanied the Mission of Sir Douglas Forsyth to Kashgar as Geographer. A few words regarding the geographical work performed on that Expedition by Captain Trotter will be necessary in this place. On his outward journey he made an interesting boat-expedition on Pangong Lake in October 1873, obtaining soundings of this elevated sheet of water; and surveyed the routes between Ladak and Eastern Turkistan. From Kashgar he made important explorations to the north as far as the Chatyr Kul. He then proceeded on his important journey, by way of Tashkurghan, to the Pamir Steppe, where he obtained a complete set of astronomical observations, and was thus enabled to fix the principal positions along the line of march with considerable accuracy. In this journey Captain Trotter started from Kashgar on the 17th of March, 1874, accompanied by Dr. Stoliczka, the Geologist, passed through Tashkurghan, and reached Panjah in Wakhan. Here he despatched his assistant, Abdul Subhan, to explore the course of the Oxus from this point in the direction of Kolab. He followed the river for 63 miles to Ishkashim, thence, turning northwards, he continued his journey along the river-bank for nearly 100 miles, passing through the districts of Gharan, Shighnan, and Roshan—countries which have hitherto been known to us hardly even by name. He describes the famous ruby-mines, and gives many particulars respecting the countries of Shighnan and Roshan. The Munshi Abdul Subhan succeeded in reaching a point very near to that at which the Havildar, coming from another direction, was obliged to turn back. Captain Trotter left Panjah on the 26th of April, 1876, and marched up the northern branch on to the Great Pamir, reaching the west end of Wood's Victoria Lake, the source of the Oxus. Captain Trotter's valuable Report has thrown a flood of light on the geography of the Pamir and of Eastern Turkistan, and it is gratifying to find that his determination of the position of the Victoria Lake is practically identical with that of Lieutenant Wood.

The reductions of the astronomical observations and the computations of heights were all made in the office of the Superintendent of the Great Trigonometrical Survey; and, among other results, a series of most valuable maps has been prepared. For Captain Trotter has not only worked out his own observations, but has also reduced those of the Havildar and Mullah, as well as those of the Pandit, Nain Singh, whose recent very remarkable journey through Tibet earned for him the Patron's Royal Medal, which has been this day publicly awarded. These native explorers did good service in the field, but, for the resulting narratives and maps, Geographers are indebted to Captain Trotter, as they were for the results of former journeys by native explorers to Colonel Montgomerie.

Regarding Nain Singh, the most distinguished of these native explorers, an account of whose latest journey, from the pen of Captain Trotter, was read before us at our last Meeting, I may add that his training as a traveller and topographer had extended over thirty years. His first experience was gained in the service of those two eminent and scientific officers, Richard and Henry Strachey. In 1856 and 1857 he was employed by the brothers Schlagintweit, whilst they were engaged in carrying on their magnetic and other observations in Ladakh and Kashmir. After some years' interval, during which he was usefully occupied in education as Head-master of a Government-school in his native district of Milam in Kumaon, he was, in 1863, taken into the employment of the Trigonometrical Survey, at the instance of Colonel Walker, and trained as an observer for topographic work in the countries beyond the Indian frontier. Since then, he has carried out with patience, intelligence, and perfect success, and at the peril of his life, a number of important Expeditions.

In 1865–66, he made his first important essay in exploration by his celebrated journey from the capital of Nepal to Lhasa; and thence he ascended the whole course of the Great River of Tibet to the region of Mansarowar Lake, a space of 10 degrees in longitude, and back to India. Though Lhasa had been reached two or three times at great intervals, during the two preceding centuries, by European travellers, none of them were practical Geographers, or had left us any geographical data; whilst the value of the observations by Chinese or Tibetan employés of the Jesuit Fathers, which formed the basis of this part of D'Anville's Atlas, has always been subject to great doubt. Nain Singh's determination of the true position of that celebrated city, as well as that of its approximate altitude above the sea, was therefore, practically, the first.

But, besides this, his elaborate route-survey of new country extended to some 1200 miles, his observations for latitude fixed that of 31 places, and those for altitude gave the approximate height of 33. He brought back, in addition, a very intelligent and interesting Diary, of which the substance is given by Colonel Montgomerie in the 38th volume of our Society's 'Journal.' Every means of judgment and comparison that could be applied resulted in showing that the Pundit's observations were most careful and trustworthy, though often made, as may be conceived, under circumstances of extreme difficulty, and straining ingenuity to obtain opportunity for making them at all.

For this great journey and its results, the Pundit received a Gold Watch from our Society in 1868. It cannot be said that his *name* became famous, for his name was necessarily suppressed, and unknown till recently, even to our Society. But, under the title of "The Pundit," his reputation spread over Europe.

In 1867, Nain Singh, with two comrades, made a second valuable journey on the Tibetan Plateau, in the vicinity of the sources of the Indus and Sutlej, and beyond them. Of this journey, also, the narrative, published in the 39th volume of our Society's 'Journal,' is full of interest.

Leaving minor services unnoticed, I pass on to the Pundit's crowning work as an explorer. Having accompanied Sir D. Forsyth's Mission to Kashgar, in 1873, without finding opportunity for detached employment, on the return of the party to Ladak he volunteered to go on a fresh journey of exploration. This journey, if not quite so important as that which earned his first fame, was over a field even yet more arduous, and less known. His route lay from Leh to Lhasa, by a line further north than any previously known, and, in fact, across that part of the high plateau of Tibet which is almost a blank in our maps. In the course of his journey he discovered an extensive series of lakes and rivers, as well as a vast snowy range to the north of the Tibetan course of the Brahmaputra.

His stay at Lhasa was cut short by circumstances of danger, and, after having determined the course of the Brahmaputra to a point very much lower than any that had yet been ascertained, he struck across the Himalaya southward, and entered Assam by the Tawang Pass; a route hitherto quite unexplored.

The total length of this journey from Ladak to the frontier-post of Assam was 1319 miles, and about 1200 miles of this lay through what may most justly be called *terra incognita.* His observations for latitude and longitude were more numerous than ever. This great and toilsome feat appears to have closed the Pundit's career of exploration. Though not far advanced in years, his constitution is stated to be worn out, and his sight impaired by protracted exposure and incessant observation, in those harsh climates and at those vast altitudes. Such are the achievements which our Society has desired to recognise by its Medal.

NEW GUINEA.—An important journey in the interior of New Guinea has been performed during the past year by Signor D'Albertis, the well-known Italian naturalist whom my predecessor mentioned in the last Anniversary Address as having accompanied Mr. Macfarlane, in the London Missionary Society's steamer, on his voyage up the Fly River. On his return from that preliminary journey, Signor D'Albertis visited New South Wales, and was there furnished, by the liberality of a number of wealthy residents of Sydney, with the means of undertaking a further exploration of this greatest known river of New Guinea. A small steam-launch, named the *Neva*, of only 12 tons burthen, was provided for him, and leaving Sydney on the 20th of April, 1876, he commenced his ascent of the river towards the end of May, with a crew of ten men, three only of whom were Europeans. The journey up the stream was continued with varied adventure, but without serious accident, until the 28th of June, by which day he had reached a point in S. lat. 5° 30′ and E. long. 141° 30′, about 500 miles from the mouth, following the windings of the river, a distance far exceeding that attained by Mr. Macfarlane in the *Ellangowan* in the previous year, which was only 160 miles. At the farthest point reached, Signor D'Albertis reports the Fly River to be in some places only 25 or 30 yards wide, and very shallow in places; indeed, it was owing to the stream in dry weather being too shallow for his little launch, which repeatedly grounded on gravelly banks, that he was forced to abandon his enterprise; his intention, at starting, having been to cross by land to the opposite northern coast of the island, should the river prove navigable to a distance of not more than 200 miles from the coast. The navigability ceased, however, at 400 miles from the northern side, and the land journey had to be abandoned. The rapidity with which the height of the water rose and fell, according as the weather was rainy or dry, shows that the traveller could not have been very far from the sources of the stream; and the swiftness of the current after heavy rain was one of the chief difficulties he had to overcome in steaming against it. The anxieties and labours of the navigation, and the impassable nature of the dense forest which clothes the banks of this great river, prevented Signor D'Albertis from adding so largely as he had expected to his natural history collection, and the same causes prevented his making any geographical *reconnaissance* beyond the immediate banks of the stream. He endeavoured to get views of the country by ascending the small eminences accessible from the banks; but at the point where he turned back no high land was in sight, the highest hills observed around averaging only from 300 to 400 feet. But lower down the river he discerned from the top of a hill, 250 feet high, some very high mountains at a distance estimated at 50 or 60 miles. As far as native population is concerned, Mr. Macfarlane's experience appears to have been confirmed, namely, that it is only the broad reaches near the mouth of the river that are at all well peopled. Beyond 100 miles, native houses and natives seem to have been very rarely met with, and the natives in almost all cases forsook their houses or their villages on the approach of the strange visitors.

In April of last year, Mr. Macfarlane made an interesting voyage in the *Ellangowan* steamer from Port Moresby to China Straits and Possession Bay, at the south-eastern extremity of New-Guinea, and made some discoveries of islands and harbours in this varied and picturesque region, which will form a valuable supplement to the result of Captain Moresby's memorable survey. The Rev. Mr. Lawes, an observant and zealous member of the London Missionary Society's Mission, takes an active part in these explorations, which are being undertaken with a view of ascertaining the best sites for Mission stations in New Guinea. He accompanied Mr. Macfarlane to China Straits, and has recently communicated an account of a subsequent visit to Point Hood, in the neighbourhood of which he discovered a fine river, 100 to 150 yards wide, which has its source on the slopes of Mount Astrolabe.

AUSTRALIA.—Mr. Ernest Giles, whose remarkable journey through the interior of Western Australia, from east to west, was recorded in the last year's Address, has since followed up his success by re-traversing this inhospitable desert from west to east, in a more northerly latitude than his previous route. Leaving the coast at Champion Bay in March 1876, he crossed the watershed of the Murchison and other rivers, and reached the head-waters of the

Ashburton in about lat. 24° s., whence he struck across the desert, passing a little to the south of Lake Amadeus, and reaching the line of overland telegraph at Mount O'Halloran. His line of march lay on the average about a degree and a-half to the north of Forrest's route.

NORTH AMERICA.—The surveys undertaken by various official departments of the United States continue to afford important contributions to our knowledge of the geography of North America; and, in connection with the purely geographical portions of these explorations, it is especially noteworthy that Transatlantic Government advisers are conspicuous for the breadth of their views in scientific matters, as mere triangulation and mensuration operations form but a small part of the published results, which include original Papers by competent authorities on the geology, palæontology, meteorology, ethnology, philology, zoology, and botany of the districts traversed.

Professor Hayden's Report of his operations in Colorado, published during the past year, is probably the most exhaustive of these surveys. The entire circuit of Colorado has now been made by his parties, and the altitudes fixed of the highest peaks of the Rocky Mountains (Blanco Peak, 14,464 feet, being found to overtop all the rest). The topographical portion of this Report is comparatively small; but the accumulation of facts in every ancillary branch of science is, as usual, astonishing, especially when it is remembered that this profusely-illustrated volume (of some 500 pages) is but one of a series issued as fast as circumstances will permit by the office of the Geological and Geographical Survey. This department has in addition published various separate parts of its "miscellaneous publications," containing much local geographical matter, and of its 'Bulletin,' of which the second volume is now well advanced; it has also recently issued three thick 4to. volumes on Palæontological and Natural History subjects connected with the survey, and all illustrated by very numerous plates and maps. Besides these, the special work of the survey has resulted in a considerable advance in the progress of the Physical Atlas of Colorado, of which, according to the President of the American Geographical Society, 6 sheets, comprising some 70,000 square miles, will be issued shortly.

In connection with these operations, Professor Powell has surveyed 7000 square miles of the east, and 4000 square miles of the south-west and south-east of Utah, resulting in an accurate knowledge of the small capabilities of that district for agricultural purposes, owing to the slight rainfall, and of its rather more promising mineral resources.

Lieutenant Wheeler, of the Engineer Department, United States Army, has continued his surveys west of the 100th meridian, in Nevada, New Mexico, and California, traversing 25,000 square miles, of which 9000 were in New Mexico, south-east of Santa Fé. His special aim appears to have been the investigation of the practicability of diverting the River Colorado so as to irrigate the desert lands of South-East California; and he appears satisfied that a canal could be constructed by which 1600 square miles could be flooded. Thirteen atlas sheets of this survey have now been issued, on scales of 8 miles and 4 miles to the inch, covering a large part of Nevada, Utah, Arizona, New Mexico, and Colorado. Lieutenant Wheeler's general Report is of a very comprehensive nature; and he has also issued two thick 4to. Reports on the geology and zoology of the survey, with many coloured plates, maps and photographs.

An accurate survey of the great North American lakes has been carried on by General C. B. Comstock, of the United States Engineer Corps; in the course of which the precise elevations of Ontario and Erie have been defined. Accurate positions have also been determined for each of the West Indian Islands by the Hydrographic Bureau; the coast survey of the Gulf of Mexico has been continued; and the continental triangulation has been pushed eastward from the Pacific coast ranges to the Sierra Nevada.

In referring, however briefly, to the geographical work of our Transatlantic brethren, it must be considered a fitting opportunity to offer our congratulations to the American Geographical Society, which, incorporated in 1852, has now fully attained its majority; and the occasion is the more appropriate, as the Society has recently acquired a new and commodious home, for which it is indebted to the public spirit and liberality so characteristic of American citizens. Under the able direction of its distinguished President, Chief Justice Daly, whose eloquence and heartfelt regard for our favourite science cannot fail to have impressed his hearers during his late visit to this country, the American Geographical Society now numbers 1750 Fellows, and possesses a geographical library of some 10,000 volumes and a large collection of maps, &c.

Geographical operations on a large scale have been engrossed by the State in America; but the numerous and valuable papers contained in the 12 volumes of 'Proceedings,' 'Bulletins,' and 'Journals' issued by the Society since 1852, sufficiently attest the vitality of Geography in the country at large.

South America.—Four papers descriptive of travel and research in remote and little known parts of the interior of this continent have been contributed to the Society during the year. Two of these, viz., Mr. Bigg-Wither, "On the Valley of the Tibagy," and Mr. Wells, on his journey from the Rio St. Francisco to the Upper Tocantins, will appear in our 'Journal,' with original maps furnished by the authors. A third paper, containing accounts of the remarkable journey of Mr. Alfred Simson across the dense forests of Ecuador, from the Pastaza to the Napo, and of his voyage of 1200 miles up the River Putumayo, will appear in the next number of our 'Proceedings.' The fourth is entitled, "Notes on Bolivia, to accompany original maps presented to the Royal Geographical Society," and is written by Mr. Musters, who distinguished himself a few years ago by his adventurous journey through Patagonia. All these papers will aid materially in filling up the still numerous gaps in our knowledge of this great continent, and supplement the work that is being carried on by the different governments.

Africa.—Africa has been the subject of discussion at four out of fifteen meetings held since our last Anniversary. The following papers have been read on this inexhaustible theme:—"The District of Akém, West Africa," by Captain J. S. Hay; "The Khedive's Expeditions to the Lake Districts," by Colonel Gordon, R.E.; Gessi's "Circumnavigation of Albert Nyanza;" and "The Livingstonia Mission at Nyassa," by Mr. Young; besides which numerous announcements have been made regarding other expeditions. We have also seen, in the columns of the 'Daily Telegraph,' the graphic letters of Mr. Stanley, the Correspondent of that Journal and of the 'New York Herald,' in Central Africa.

Colonel Gordon's Expeditions.—Under the instructions and personal superintendence of this officer, a complete scientific survey of the Nile has been made, commencing at Khartum, and ending at a point 40 miles distant from the northern end of Victoria Nyanza—a survey altogether of 1500 miles of river. Three officers of our Royal Engineers, with M. Gessi, have accomplished this, namely, Colonel Gordon and Lieutenants Watson and Chippendall. The "suds," course, current, width of the river—the rocks, rapids, and nature of the country—have been laid down with minuteness, and two maps, on the scale of 35 miles to an inch, have been prepared for our Society from the original drawings of the above officers. These maps will remain as standard references.

Romolo Gessi has circumnavigated the Albert Lake with two iron boats built by Samuda Brothers, and states it to be 141 miles from north-east to south-west, and from 40 to 60 miles across. Leaving Dufli by boat on the 7th of March, 1876, he arrived at the mouth of the Lake on the 18th of March. The slow progress up this part of the river he attributed to contrary winds, incessant rain, and river-currents. The distance is 164 miles, along a deep, broad, navigable river, exceeding 700 yards in certain places, with a large population and a productive country on the western bank. From the mast-head of his cutter-rigged boats he observed hills and cliffs in the distance. On the shores of the Lake, forests of ambatch were of frequent occurrence. The people on the western shore were not friendly, sounding their war-drums and carrying their property away; however, M. Gessi was able to hold conversations with a few natives, the result of which seemed to prove that he had reached the farthest extremity of Albert Lake, and that there is no river feeding its southern extremity. At the same time, the mountains which he saw on either side of the Lake appear not to meet at the south end, and there may exist a passage for water to the south, though it was not observed, from the quantity of ambatch growing there.

M. Gessi remained on the Lake from the 18th of March till the end of April; a period of stormy equinoctial days, for he experienced constant rain and high winds. He has proved without a doubt that the Nile descends from Victoria Nyanza, enters the Albert Lake, and flows from it, at fourteen miles farther north, to Dufli; thus setting finally at rest the question of the direct connection of the Nile with these great Lakes. This question was rashly disputed by Dr. Schweinfurth (see President's Address of last year), although maintained by the late Captain Speke, and confirmed by Sir Samuel Baker. From the smallness of his escort, and the uncertain character of the people, M. Gessi did not examine the interior of the country, neither could he closely observe the streams flowing into the Lake on the eastern and western shores, but he reports several waterfalls and bays, where the colour of the water indicated the proximity of considerable streams.

Carlo Piaggia accompanied M. Gessi from Dufli to Albert Lake in 1876, thence he proceeded alone up the Nile, and examined the new Lake, or back-water of the Nile, discovered by Colonel Long, near M'rooli. This has since been visited by Colonel Gordon himself, who has sketched its outline, as far as he observed it, on the map presented to the Society, which is published in the present volume of the 'Journal.' Respecting other travellers in this part of Africa, I may mention the following:—Signor Marno, after endeavouring to push south to the Balegga Mountains had returned to Egypt. Mr. Lucas intended to have proceeded to the head-waters of the Congo from Gondokoro; but severe illness prevented this, and the unfortunate traveller died on his way to England, as I have had occasion to relate in the Obituary notices at the commencement of this Address. Dr. Schrietzer (Emin Effendi) had visited King M'tesa of Uganda, was well received, and confirmed the previous observation of Mr. Stanley that the King was favourable to Christianity.

The Khedive of Egypt has recently given to Colonel Gordon supreme command over all the Soudan, from the second cataract, including Khartum, to the Equatorial region, with the view of suppressing slavery and developing all lawful commerce. He has appointed him to negotiate a peace between Egypt and Abyssinia, and with this view Colonel Gordon has been at Massowah for some time; but this object is not accomplished, and we hope to hear of his having taken up his Governor-Generalship of all the Soudan.

General Stone, the chief of the general staff at Cairo, has kindly reported to our Society the various reconnaissances which have been made under his orders and those of Colonel Gordon in Egyptian territory; the most notable of which are:—Reconnaissances of country adjacent to the White Nile, by Colonel Long; Kordofan, &c., by Colonel Colston and Major Pemberton; Darfur, &c., by Colonel Purdy. Botany of Kordofan and Darfur, by Dr. Pfund. Topography and geology, by Mr. Mitchell; besides surveys, soundings, &c., by numerous other officers of the Egyptian staff.

Stanley's Expedition.—The Address of last year left Mr. Stanley to explore the then unknown south-western corner of Victoria Lake, between the Kitangule River and Jordan's Nullah of Speke. He had discovered the Shimeeyu River, which was "considered the true source of the Nile—that is, the most southern feeder of Victoria Nyanza;" but his recent letters inform us that a still more important river, the above-named "Kitangule," now claims this honour. Mr. Stanley has visited the Albert Lake, and circumnavigated Lake Tanganyika.

Between July 1875, and August 1876, Mr. Stanley traversed by water, or on foot, from 1200 to 1500 miles; that is to say, he made about 4 miles daily, inclusive of halts, which is unusually fast travelling in the interior of Africa. Since his letter of the 15th of May, 1875, alluded to in last Address, the following have been published, giving detailed accounts of the countries he has visited:—Dated 29th July, 1875; 15th August, 1875; 18th January, 26th March, 24th April, 7th, 10th, and 13th August, 1876.

Pocock's letters are dated as follows:—14th August, 1875; 18th April, 1876. Ujiji, 21st July, 1876; 23rd August, 1876.

Stanley's letter from the Island of Bambireh, Victoria Nyanza, describes to us, with a map, the south-western corner of the Lake. Here are figured thirty-eight islands, from 1 to 10 miles from the shore; and the largest of them, Bambireh and Romeh, 12 miles in length by 2 or 3 in breadth. Two soundings appear upon the map, near Alice Island; the one next the shore is 166 feet, and the other, 15 miles to the south-east, is 338 feet; showing that this lake is navigable for any ship afloat. Having returned to his head-quarter camp at Kagehyi, he again crossed in a north-westerly direction to Dumo, in Uganda territory, and proceeded under a Waganda escort to explore the country between the Lakes Victoria and Albert. On entering Unyoro territory the people naturally were not friendly to Waganda soldiers, and Mr. Stanley had no opportunity of navigating the Albert Lake, through the timidity of his Waganda, who feared the dense population of Wanyoro. But he reached a bay of the Lake, which he named "Beatrice;" and, compelled to give up all hope of navigating it, he turned his attention to the south, and after several days crossed the River Kitangule, for the Arab settlement of Kufuro, in Karagweh. Mr. Stanley's opinion of the Kitangule Kagera is as follows:—"While exploring the Victoria Lake, I ascended a few miles up the Kagera, and was then struck with its volume and depth; so much so, as to rank it as the principal affluent of the Victoria Lake. In coming south, and crossing it at Kitangule, I sounded it, and found it 14 fathoms, or 84 feet deep, and 120 yards wide." This river will be recognised as the same which was crossed in 1862 by Captains Speke and Grant, and which they reported as a majestic navigable river from the Akenyara Lake.

While under the kind care of King Rumanyika, of Káragweh, Mr. Stanley made many important journeys to the west and south of the kingdom, visiting this great Lake district, and region of conical mountains and hot-springs, full descriptions of which I must ask you to refer to in his graphic letters. From here he traversed the districts of Western Unyamwezi; and we next find him on the 27th May at Ujiji. After a fortnight's arranging, Mr. Stanley left his heavy baggage in charge of Pocock on the 11th June, and proceeded to circumnavigate the Tanganyika Lake for fifty-one days. He estimates the Lake to be 800 miles in circumference, and 19 miles longer than Commander Cameron reckoned it. The Lukuga Creek, of Cameron, was examined during four days. The broken cane in the bed of the creek denoted to Mr. Stanley that any water must flow into the Lake, and not out of it; and he considers that the Lukuga has never been an outlet, and is not at present one, but that it will be the "waste-pipe" of Tanganyika in a few years, when the Lake begins to overflow. He tells us that Mr. Cooley's idea of there being a connection between Tanganyika and Nyassa Lakes is as absurd as Livingstone having separated Liemba from Tanganyika, Baker having married the Albert and Tanganyika, or Speke having made an island of a promontory (Ubwari). Mr. Stanley raises an interesting question as to the name and derivation of the word Tanganyika, saying that travellers have fallen into mistakes through the circumstance of the name of the country being applied to the Lake. At Liemba the Lake is not called Tanganyika, or *vice versâ*. The derivation of the word, according to Mr. Stanley, is "Plain-like Lake;" but this is not accepted as the true interpretation. Nyika is used as a proper name in Africa, and as portion of one, as Rumanyika; also, it is applied on the native routes west of Bahringo by the Rev. T. Wakefield as Mtanga-nyiko, which undoubtedly implies a swampy region. It signifies the floating water-plants, which produce edible roots—the "Singhara" of India, *Trapa natans;* and from the fact that this plant exists plentifully in Africa, and that quantities of floating vegetation were seen by the late Dr. Livingstone opposite Ujiji, it may be taken as the more probable interpretation of the two, namely, from *Tanganya*, to gather; and *Nyika*, (?) nuts: that is, "Tanganyika," meaning "collection of water vegetation," or "the habitat of the water-nut."

Mr. Stanley writes of "my discovery of the new lake and river," which he ventures to name the "Alexandra Lake and River." He tells us that "he could not see this lake from his mount of observation because the Mountains of Ugufu intercepted all view of it; but his guides assisted him to understand the position of the Lake." This water, we are told, has three outlets—two flowing to the east towards Kitangule, and the third to the south, joining the Ruzizi Lake, which is made to discharge to Lake Tanganyika. This requires inspection, which we hope will soon be made by the Mission party who have proceeded to Karagweh; and if a reference be made to Speke's map in vol. xxxiii. of the Society's 'Journal,' this Lake Akenyara, which Mr. Stanley proposes to name Alexandra, will be found laid down 27 miles by 4½. The total length of this river is 200 miles according to Speke, and 310 miles, "and perhaps as many more," according to Mr. Stanley; while the Shimeeyu is calculated at 229 miles.

One other remark regarding the Kagera. Mr. Stanley tells us that during the dry season it exceeds in volume the "Thames and Severn united, and is 70, 80, and 120 feet in depth, with a width of 150 to 200 yards; and, as it passes through the shallow Lake Ingezi, which is 5, 10, and 14 miles in width, it sustained its depth of 40 to 60 feet." But whether this river, or the Shimeeyu, or any other river flowing into the Lake, is to be considered a source or not—among so many, and all so distant from the Nile—the honour will still remain with the parent-mother Victoria.

My own opinion on this subject is much in accord with that of a well-informed writer in the 'New York Sun' of the 15th of March last, and I cannot, perhaps, do better than quote his words:—"That he has verified Captain Speke's delineation of the Victoria Nyanza, only proves the excellent geographical results achieved by that officer; and Mr. Stanley deserves every credit for the minute survey he has made of the Lake, which confirmed the accuracy of Captain Speke's hypothesis. It is a pity he should not have been content to rest upon these laurels. Instead of this, he has assumed that if he can find out which of the numerous tributaries flowing into the Victoria Nyanza is the largest and longest, he will be entitled to claim that as the Nile. First, he found the Shimeeyu, and called that the source of the Nile. Unfortunately he afterwards came upon a much larger affluent, called the Kagera, which entirely extinguished the Shimeeyu, and then he called that the Alexandra Nile. But this river had been examined by Speke and Grant; and it is a gross violation of all etiquette among explorers for a new name to be given to it by a gentleman who visits it fifteen years after its first discovery, and calls it the Alexandra Nile, in order that, should he ever discover its source, he may claim to have discovered the source of the Nile. In the first place, it is not the Nile, any more than a stream running into Lake Superior can be called the St. Lawrence; and in the second place, if it was the Nile, he has not discovered it. This he frankly admits. Had he read Captain Speke's book he would have found that that officer fully appreciates the importance of the Kagera River as probably the largest affluent of the Victoria Nyanza; but he judged, and judged rightly, that where a huge lake is fed by hundreds of affluents, several of which are nearly of a size, the river that runs out of it is not the same river as any one of those affluents. . . . The true Nile only begins where it issues from the Lake."

"Mr. Stanley would also have found, had he had Captain Speke's book with him, that he advances nothing new with regard to the watershed on the west of the Victoria Nyanza. Speke lived for several weeks at Rumanyika's, almost on the banks of the Kagera, and within 50 miles of the Lake which Mr. Stanley never saw, but of which a map is given in the 'Herald,' as though he had discovered it, and which, not having discovered, he has no right to call the 'Alexandra Nyanza.' The proper name of this lake is Akenyara, and it is to be found carefully delineated in one of Speke's maps. 'What I could not see,' says Mr. Stanley, 'because of the mountains of Ugufu, was Akenyara, but my guides assisted me to understand tolerably well the position of the Lake.' Hereupon exclaims the 'Herald:' 'The grand problem of the geographical era, which may be said to have commenced with the days of Ptolemy, has been the discovery of the sources of the Nile. To solve it many explorers have essayed and failed, leaving to Henry M. Stanley the palm of the victor, the glorious prize of success!'"

Although I should not have expressed myself exactly in these terms, I concur in the justice of the opinion here given of the want of originality in these so-called discoveries. It should, however, be said that since Speke and Grant gave no names of their own to either lake or river, but merely recorded the native names, the deviation from good taste and usage in any later explorer—who as regards the river had really navigated some 100 miles of its course—to give it a name of European origin is not wholly without precedent or justification, whatever may be said as to the lake which he only took on native report, and never saw. I may cite here the precedent afforded by Speke himself, who gave the name of Victoria to Lake Ukerewe; and, still nearer the point, that of Sir Samuel Baker, who re-named the "Little Luta N'zige" of Speke, the Albert Nyanza.

Mr. Stanley, when his last letter was written, had been suffering after his long cruise, and the natives around him were dying of small-pox, at the rate of forty to seventy per day. But he was to leave on the 24th of August last, by crossing the Lake and making for Nyangwe. There he would decide as to his future route of exploration by proceeding to the M'Kinyaga country, where he expected to find the true head of the Kitangule Kagera, or he would follow the right bank of the Lualaba to "some known point."

Turning to the more northern portion of Nile Land, we find that Dr. P. Ascherson, who, two years previously, had been botanising with Rohlfs, had left Benisuef, Egypt, on the 16th of March, 1876, for Medinet-el-Fayum, and reached Bauite, the capital of the Oasis Parva, on the 1st of April, returning by a new route to the Nile at Samalut, having completed the flora of the region, and discovered plants in the oasis which were of a more Eastern habit, and not known to have existed there.

Drs. Schweinfurth and Gussfeldt returned last May from a visit to the desert countries to the east of the Nile, near the monasteries of San Antonio and St. Paul. The former had botanised and studied the geology of the region, and the latter had determined the positions of twenty stations.

New Routes to Central Africa.—On the Zanzibar side of Africa great strides are being made to open up the interior to commerce; but we want the country more fully surveyed before stating what particular routes are the best. On this subject I would call your attention to the excellent paper by Mr. E. Hutchinson (of the Church Missionary Society), published in the 'Journal of the Society of Arts,' March 30th, 1877. No doubt there is ample room in so extensive a region, from north to south and from east to west, for half-a-dozen routes. The line from Formosa Bay by the River Dana and Mount Kenia to Victoria Nyanza would recommend itself as the shortest to this great lake; but, till a survey has been made of it, we cannot say whether the country or the inhabitants are such as to render such a route practicable. Sooner or later, however, it must be one of the principal ones to the north end of Victoria Lake. Proceeding further south to Mombas, a route from here westwards in the direction of the southern end of Lake Victoria would have the advantage of being the shortest to this named point. Then follow routes to M'papwa, as adopted by Mr. Mackay and the Rev. Roger Price; the old main road to Unyanyembe. Also the Rovuma route upon which, at one hundred miles from the coast, the Rev. Dr. Steere has placed a colony of liberated slaves as an experiment. In connection with this, a recent visit paid by Dr. Kirk, in H.M.S. *Philomel*, to the coast district between Kilwa and Cape Delgado, has an important bearing. In a despatch, a copy of which has been sent to us by Lord Derby, this experienced observer says that a great change had taken place since 1873, in the trade and social condition of this region. The slave-trade, which formerly constituted almost the sole occupation of chiefs and merchants, had ceased, and in its place a healthy and active commerce in the natural products of the country had become established. We learn also from Dr. Kirk, that Capt. Elton, Consul at Mozambique, is about to visit the northern end of Lake Nyassa, viâ the Zambesi and the Shiré, and thence to return to the coast overland, thus supplying the desideratum—the exploration of the nearest route to the northern end of the lake, which is dwelt upon in Mr. James Stevenson's recent pamphlet, 'Notes on the Country between Kilwa and Tanganyika.' All these are advances towards civilization, and we hail with pleasure the worthy efforts that are being made to establish a regular route for communication between the port of Kilwa and the north end of Nyassa, as it will be an independent means of transport for goods to the shore of the Lake, and need not interfere with, but will encourage, the trade of the Portuguese at Quillimane and other possessions on the coast. It is also in contemplation to survey a road connecting a depôt at the north end of Nyassa with the south end of Tanganyika, where the London Missionary Society propose to form a station in connection with others at Ujiji, or some such suitable place. Further south still, an attempt will probably be made to survey a direct line of country, from south to north, from the Gold-fields of the Trans-Vaal to Unyanyembe. The Church Missionary Society are trying to construct a road to M'papwa, and we expect to hear shortly that their parties have been received by the Kings M'tesa of Uganda, and Rumanyika of Karagweh. One party has already reached Kagehyi, on the southern shores of Victoria Nyanza; on the other hand, a well-equipped party of the London Missionary Society left England on the 14th of April last, *en route* for Lake Tanganyika, viâ M'papwa. The good service rendered by the Rev. Roger Price—in having successfully travelled to M'papwa with four bullocks for the purpose of ascertaining whether the route was suitable for the employment of these animals—is most commendable: he found by actual experiment that it is perfectly feasible to take a bullock-wagon from the Eastern Sea-coast up to the Central Plateau, and that there is neither jungle nor swamp, hill nor tsetse-fly, to hinder such a course. This marks a new era in African travel; for if the impediment of porters can be got over by any means, whether by bullock-carts, or, which we have more faith in, camels as beasts of burden, we shall be independent of porters, and be able to employ the men in other ways.

We were rejoiced on the 26th of February last to have Mr. E. D. Young once more amongst us, and to hear from him an account of his latest journey to Africa. He has successfully established the Missionary party, sent out with splendid liberality by the Scottish Free Church Mission Committee, at "Livingstonia," on the southern shores of Nyassa; and has been the first to launch a steamer on the waters of an African lake. After an absence of twenty-one months, he has returned, in nowise impaired in health or energy by the work he performed. The chief interest in his journey to us Geographers is that the Lake is found to be 100 miles longer than Dr. Livingstone supposed it to be. We may also congratulate ourselves on the fact that Mr. Young has made a treaty between the Makololo and the Maviti, or Watuta of Speke. The latter are a wandering and plundering set of thieves and murderers, who range along the Nyassa Lake, extend to Tanganyika, and have even crossed the route between Unyanyembe and Usui. They are a very numerous class, of no particular race; and if this alliance made by Mr. Young holds good, and were extended to them all, trade and the industry of the regular inhabitants would have a better chance of succeeding.

German Expeditions.—Dr. Lenz returned to Hamburg from the Ogowé and Gaboon region, West Africa, on the 27th of January last, his farthest point having been a waterfall beyond Lonju on the River Muni, where his stores failed him. The Doctor's health had suffered severely from dropsy.

Dr. Pogge reached Hamburg on the same date, having made a most successful journey to Musumbe, the capital of the present Muata Yanvo, the suzerain of the Cazembe. His farthest point was Inshabaraka, and he would have gone to the town of the Cazembe but was prohibited. By travelling with a native caravan he obtained much information regarding the countries between the Kasai and Quango, and made considerable collections of insects and plants, besides getting sixteen skulls of numerous races of the interior. Musumbe, which had never before been visited by any explorer, lies many days' journey to the north, and west of Cameron's line of march. Dr. Pogge thinks that the River Kasai is the main feeder of the Congo, and that the Lualaba belongs to the Ogowé system, but this is disputed by other authorities.

Herr Edward Mohr, who came to England last year, and was present at our Anniversary Dinner, is said to have died of fever on the 26th of November, 1876, at Melanje. There was also a rumour of his having been poisoned, but we have no particulars as to his exact death. He had reached St. Paul de Loando on the 28th of August last, and left for Melanje upon the 1st of September.

Turning to the East Coast of Africa, we learn that Dr. G. A. Fischer and Herr A. Denhardt (an engineer) were to proceed to Zanzibar last December, in the hope of ascending either the River Dana or Ozy, near Formosa Bay, and penetrating *viâ* Kenia to the Victoria Lake. This is one of the most important routes, as previously stated, in East Africa; and, if the people in the interior prove hospitable, great results may be expected from opening up this, perhaps the most fertile region in Africa, being within a degree or so of the Equator. They are to introduce a novel mode of communication—carrier-pigeons. Herr J. M. Hildebrandt also proceeds in this journey to the Lake.

Dr. Ervin von Bary reports in December last, to the German African Society, that he was on his way to Jebel Ahaggar, in the Tuareg country; but in consequence of disturbances there, he has altered his plan, and purposes reaching Timbuctoo by a more southerly route. The latest account of the Doctor is that he had reached the hot-spring of Sebarbaret, which is 150 miles north-west of Ghat.

French Expeditions.—The Expedition under Lieutenant de Brazza, of the French Navy, with Dr. Ballay and M. Marche, and seventy soldiers, intended to proceed from the west up the River Ogowé, and on till they reached the Albert Nyanza or the Niam-Niam country. Dr. Ballay arrived at a point 250 miles from Gaboon; but the party had suffered much in the loss of instruments by the upsetting of canoes. There was a greater annoyance still than this:

the tribe of Osyeba were not at all inclined to be friendly, having had a serious misunderstanding with a previous party of explorers: and it was doubtful whether the present party could proceed to the interior by this route. M. V. Largeau, who had made two journeys in the north-west of Africa, was appointed by the French Geographical Society to command an expedition from the Mediterranean to Assini on the Gold Coast last July. He would explore the Jebel Ahaggar in the Tuareg country, and visit Timbuctoo. The latest accounts were received in April, stating that M. Largeau would leave Biskra for Tuat, *viâ* the Wady Myah, on his way to the Ahaggar country, immediately on receiving his supplies. Surveys of the coasts of Southern Tunis and Tripoli, which are occupied by tribes who are said to plunder both by sea and land, have been completed by Captain Mouchez, of the French Navy; and Captain Rondaire has completed the levelling of the Tunisian Shotts, leaving no doubt that an inland lake might be formed to the south-west of Algeria.

Italian Expedition.—The Marquis Antinori and party having left Europe on the 8th of April, 1875, on an exploration of four years to the capital of Shoa, and thence to the Equatorial Lakes, had reached Lichi, in the kingdom of Shoa, all safe and well, after, however, having escaped assassination between Zeila and Harar, and experienced difficulties in crossing the Hawash. He anxiously looked for the arrival of Captain Martini with supplies before proceeding farther; and as this officer was to be conveyed to Zeila in the Italian corvette *Scilla* last March, we hope the Marquis will not be detained in proceeding upon his very important journey to Victoria Lake, but, meantime, he had met with a gun-shot accident.

Portuguese Expedition.—We have lately heard that the Government of Portugal have, with the most enlightened liberality, reminding us of their former glory in Geography, voted the sum of 20,000*l.* towards exploration in the interior from their possessions on both coasts, and we congratulate their Geographical Committee, and welcome them in the field of research and discovery. They have suffered a great loss in the death, on the 7th of December last, at Loanda, of Baron Barth, who was engaged on a Geological and Geographical Survey of Angola.

West Coast.—M. M. J. Bonnat, a resident for many years in Western Africa, particularly in the Ashanti country, took five boats and twenty-seven men up the Volta River on the 7th of December 1875, and reached, partly by water and by land, Salaha, or Paraha, the commercial capital of these parts; a town which was very populous at one time, but now contains only 18,000 people. M. Bonnat states that the Labelle Rapids, though 25 feet high, can be ascended by steamer during the rains in September and October, because the river rises 50 feet at this season.

We have already alluded to the interesting Paper of Captain J. S. Hay, who read it to us last June, on his residence for three months at Kyebi, the capital of Akém, West Coast of Africa. The district lies between 6° and 7° N. lat., and to the east of Ashanti. The Captain was there on duty guarding the Protectorate, during a war between the Ashantis and Djaubins, towards the end of 1875. In November, when he traversed the route from Accra inland, it was mud and water for days, and rain fell daily. On reaching the interior, the country is mountainous. The people live on the tops of their hills in houses completely concealed by the dense primæval forest; but there is abundant food obtainable, the soil being rich, and four rivers run through the country. These are only navigable for small boats, and are broken by waterfalls. Gold and timber seem to be the richest products of this region.

African Exploration Fund.—Having now passed in review the various African Explorations, British and Foreign, already completed or in progress during the past year, it only remains for me to bring more especially under the notice of this Meeting and the Society, the steps which have been taken since my opening Address to give effect to the desire of the Council to promote, to the extent of their power, the continuous and systematic exploration of Africa, and more especially of that large region extending from the Equator to the Cape of Good Hope. After the Meeting of the Conference at Brussels in September 1876, at the invitation of the King of the Belgians, and from that time, the subject has engaged the serious attention of the Council. Unable by the Charter of the Society, and the declared objects of its constitution, to enter upon any undertaking not strictly Geographical, it was found impossible for them to take part in the International Organisation inaugurated at the Brussels Conference for much larger objects. They were reluctantly, therefore, obliged to decline entering into the plans for affiliated and international labour in this field, and to form a separate Committee, under the title of an "African Exploration Fund Committee," acting under the direction of the Council, and independent of all International or other

Associations and Societies with similar objects. Independent so far as their responsibility and action are concerned, they will maintain a correspondence, and cordially co-operate as far as the constitution of the Royal Geographical Society will admit, with all other Societies or bodies engaged in advancing African Exploration, and more especially with the International Commission permanently sitting in Brussels.

The Council, animated with these sentiments, placed them, together with the objects they proposed to accomplish, on record in a Minute constituting the Committee above referred to, and defining their powers and the duties assigned to them. Having obtained the consent of His Royal Highness the Prince of Wales to associate his name as Patron, this Committee have since been maturing their plan of operations, and preparing a Sketch-map to accompany a Circular, appealing to the Society and to the public for support and co-operation in the prosecution of such continuous and systematic Explorations in Africa as they are satisfied will best advance the Geographical knowledge of these regions, and, in the proportion that it is attained, will also materially tend to promote both commerce and civilisation.

This Circular, and the proposed proceedings of the Committee, have now received the sanction of the Council, and it will be very shortly circulated among the Fellows, together with the original Minute; and, in that shape, it is thought the whole subject may be brought before the public in a satisfactory manner, with a view to obtain the necessary funds. Great interests, besides those of Geographical science, are concerned, if not inseparably connected with a successful prosecution of the work now contemplated, and the subject is one of the most important, both in a national and philanthropic sense, that can well engage the sympathies and attention of this Society and the community at large. Under these circumstances the Council feel confident that the appeal they have now willingly sanctioned will meet with a ready response over a wide area, not limited to the United Kingdom, but including all our Colonies, one of which, by no means the least important, is more deeply interested in the prosecution of these Geographical Explorations than any other portion of the British Empire.

POSTSCRIPT.

Chinese Empire.—After the foregoing was made ready for the press, I received from our Honorary Corresponding Member, Baron von Richthofen, the well-known geologist and traveller in China, a copy of the first volume of his magnificent work, entitled 'China, Ergebnisse eigener Reisen und darauf gegründeter Studien. Berlin, 1877.' The Presidential Address for this year would be very incomplete without a brief notice of this volume, forming, as it does, the commencement of what will undoubtedly be one of the most complete works on a subject of Special Geography which has appeared in our time. The volume, although only the introductory part of the work, forms a handsome quarto of 760 pages, well illustrated by maps and diagrams, and treats principally of the General Geography of Central Asia and China Proper, entering thoroughly into the formation of the surface and the causes of the striking diversity between the central and outer regions, the nature of the "loess" which covers nearly all Northern China, and is the cause of its fortility, and other features of Physical Geography. The more detailed account of the author's investigations of the coal-fields and general Geology is reserved for the subsequent volumes, three in number. The completed work will be accompanied by an Atlas of 44 maps, constructed by the author, who made this one of his chief tasks during his long journey through the Chinese Provinces.

PAPERS READ

BEFORE THE

ROYAL GEOGRAPHICAL SOCIETY

DURING THE SESSION 1876-77.

[FORMING VOL. XLVII. OF THE SOCIETY'S JOURNAL.
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I.—*On the Buried Cities in the Shifting Sands of the Great Desert of Gobi.* By SIR T. DOUGLAS FORSYTH, K.C.S.I.

[*Read*, November 13th, 1876.]

AMONG the many objects of interest which attracted our attention during the late mission to Kashghar, not the least interesting was an inquiry regarding the shifting sands of the Great Desert of Gobi, and the reported existence of ancient cities which had been buried in the sands ages ago, and which are now gradually coming to light.

When Mr. Johnson returned in 1865 to India from his venturesome journey to Khotan, he brought an account of his visit to an ancient city not far from Kiria, and five marches distant from Khotan, which had been buried in the sands for centuries, and from which gold and silver ornaments, and even bricks of tea were dug out.

On the occasion of the first mission to Yarkund in A.D. 1870, we were unable to gather much information, and I observe that in Mr. Shaw's book, 'Travels in High Tartary,' no allusion to the subject is made. Tara Chund, the energetic Sikh merchant whom Mr. Shaw mentions, and who accompanied me on both my expeditions, told me that this exhumed tea was to be found in the Yarkund bazaar, but as our stay in that city in 1870 was of very short duration, and we had no opportunity of moving about and making inquiries for ourselves, we returned to India with very vague ideas on the subject. On my second visit in 1873, I determined to make more searching inquiries, and for this purpose I endeavoured to collate all the information obtainable from published works, as well as from

Oriental books, such as Mirza Haidar's 'Tarikhi Rashidi,' a valuable copy of which I picked up in Kashghar. I also consulted many natives of the country, and other authorities. And the first of all authorities unquestionably is Colonel Yule. Not only has this distinguished geographer, by his laborious researches and translations, thrown a flood of light on the history and geography of Central Asia, and given to the world an invaluable commentary on the travels of Marco Polo, and other mediæval explorers, but I gladly take this opportunity of recording the deep obligations under which he placed myself and all the members of the Mission to Kashghar, by the valuable hints and information he supplied to us from time to time. To him I was indebted for the loan of a copy of Rémusat's 'Histoire de la Ville de Khotan,' a most useful work. Colonel Yule very justly remarks, regarding the great Venetian traveller of the middle ages, that all the explorers of more modern times have been, it may be said, with hardly a jot of hyperbole, only travelling in his footsteps; most certainly illustrating his geographical notices.

It is only proper then to place Marco Polo at the head of the list of authorities to whom I shall refer. The 36th and three following chapters refer to the country in which we are at present interested. His chapter on Khotan is provokingly meagre, for there is very great interest attaching to this place. It is supposed by some that this city was the limit of Darius's conquest. I have several Greek and Byzantine coins which were found in the ruins of the city near Kiria.

We know that in early ages it was inhabited by political exiles from India, that the Hindoo religion flourished there; and I have some gold ornaments found there, which are exactly the same as those worn by the Hindoo women of the present day. In Rémusat's History we read how the King of Khotan took an army across the Snowy Mountains and attacked the King of Cashmir, and how peace was made between the two countries, and the result was that certain Rahans or Ascetics brought the Buddhist religion into the country; and in the 'Tarikhi Rashidi' we read how a Christian Queen, wife of Koshluk, ruled in the land and made proselytes to her religion.

I will not enlarge now on the frequent intercourse in former ages between Khotan and India, but I may, however, here correct an erroneous impression which was conveyed to the Members of the Royal Geographical Society at its last Session. A good deal was said regarding the impenetrable barrier raised by the Himalayas, and Colonel Montgomerie said that the only army which ever crossed went from the Indian side and never returned. But, not to refer to invasions of ancient times mentioned by Rémusat, Mirza Haidar, in his 'Tarikhi Rashidi,' gives graphic descriptions of an expedition under Sultan Saïd and his minister, Mirza Haidar, from the Yarkund side, which was very successful, and on the road between the Susser Pass and the Karakorum we passed the wall which had been erected by the Rajah of Nubra to help to resist the invasions of the armies of Khotan and Yarkund.

The 37th chapter of Marco Polo relates to Pein, and it is evident that at that time the city called by that name was in existence. From the geographical description given by Colonel Yule in his valuable notes on this chapter, I should say that Pein or Pima must be identical with Kiria. Colonel Yule's remark regarding the looseness of morals in the towns of Central Asia is doubtless correct, but I record the fact that the present ruler of Kashghar professes to enforce a very strict code of morality. It is peculiar of its kind, but it is supposed to be framed on the Koran, and according to the practice of orthodox Mahommedans, and he would be horrified if he knew that the accommodating rules of the Shias were supposed to prevail in his country. One of his followers once, speaking to me in no measured terms against the Shias, said he would have as much pleasure in slaying a Shia as an infidel, and his language would remind one of the animosity displayed by Catholics and Protestants to each other in days not very long gone by.

As regards Charchan, or Charchand, we got some information from persons who had been there. It is a place of some importance; and was used as a penal settlement by the Chinese, and is now held by a governor under the Ameer of Kashghar. It contains about 500 houses, situated on the banks of two rivers, which unite on the plain and flow to Lake Lop. The town is situated at the foot of a mountain to the south, and the river which flows by it is said to come from Tibet.

Captain Trotter has remarked that the exact geographical position of Charchand is not fixed with any degree of certainty; but it is probably about equidistant from Kiria and Kurla, and he gives the marches from Khotan to Charchand, *viâ* Kiria:—

Khotan to Kiria	4 marches =	104 miles.
Kiria to Charchand	14 marches =	280 or 300 miles.
	Total	384 or 400 miles.

Marco Polo describes the whole province as sandy, with bad and bitter water; but here and there the water is sweet. This agrees with the information we obtained, which was that, between Charchand and Lop, there are oases where wandering tribes of Sokpos, or Kalmaks, roam about with their flocks and herds. I was informed that the present Governor of Khotan rode across from Kurla direct in fifteen days, a distance of about 700 miles.

The stories told by Marco Polo, in his 39th chapter, about shifting sands and strange noises and demons, have been repeated by other travellers down to the present time. Colonel Prejevalsky, in pp. 193 and 194 of his interesting 'Travels,' gives his testimony to the superstitions of the Desert; and I find, on reference to my diary, that the same stories were recounted to me in Kashghar, and I shall be able to show that there is some truth in the report of treasures being exposed to view. I give the following from Colonel Prejevalsky's work:—

"The sands of Kugupchi are a succession of hillocks, 40, 50, rarely 100, feet high, lying side by side, and composed of yellow sand. The upper stratum of this sand, when disturbed by the wind blowing on either side of the hills, forms loose drifts, which have the appearance of snowdrifts.

"The effect of these bare yellow hillocks is most dreary and depressing when you are among them, and can see nothing but the sky and the sand; not a plant, not an animal is visible, with the single exception of the yellowish-grey lizards (*Phrynocephalus* sp.), which trail their bodies over the loose soil, and mark it with the patterns of their tracks. A dull heaviness oppresses the senses in this inanimate sea of sand. No sounds are heard, not even the chirping of the grasshopper: the silence of the tomb surrounds you. No wonder that the local Monguls relate some marvellous stories about these frightful deserts. They tell you that this was the scene of the principal exploits of two heroes — Gissar Khan and Chinghiz Khan. Here these warriors fought against the Chinese, and slew countless numbers, whose bodies God caused the wind to cover with sand from the desert. To this day the Monguls relate with superstitious awe how cries and groans may be heard in the sands of Kugupchi, which proceed from the spirits of the departed; and that every now and then the winds, which stir up the sand, expose to view different treasures, such as silver dishes, which, although conspicuous above the surface, may not be taken away, because death would immediately overtake the bold man who ventured to touch them."

When I was at Peking last spring, I had the good fortune to meet Dr. Bretschneider, physician to the Russian Legation, an accomplished Chinese scholar, whose Notes on Chinese mediæval travellers to the west contain valuable information. One of these travellers, Kin Ch'ang-chun, thus writes of his journey across the Great Desert in A.D. 1221:—"Whoever crosses that place in the daytime, and in clear weather (*i.e.* exposed to the sun), will die from fatigue, and his horses also. Only when starting in the evening, and travelling the whole night, is it possible to reach water and grass on the next day by noon. After a short rest, we started in the afternoon. On our road we saw more than a hundred sandhills, which seemed to swim like big ships in the midst of the waves. The next day, between 8 and 10 o'clock in the morning, we reached a town. We did not get tired travelling at night-time, only were afraid of being charmed by goblins in the dark. To prevent the charms, we rubbed the heads of our horses with blood. When the master saw this operation, he smiled, and said goblins flee away when they meet a good man, as it is written in the books. It does not suit a Taoist to entertain such thoughts."

One thing strikes me as remarkable, that though, as I suppose, Marco Polo visited Khotan, and passed along the road to Lop, he nowhere mentions the report of buried cities being in existence. Mirza Haidar, writing two centuries afterwards, alludes to them; and we learn from Chinese authorities that they were known to have been buried many centuries before Marco Polo's time.

Before passing to other authorities, I may make a remark on one of Colonel Yule's Notes on this chapter. He speaks of the cities of Lop and Kank. But this Kank is, I think, probably the Katak mentioned by Mirza Haidar. The word in Persian is written کٮک, and it depends on the diacritical points in the middle letter whether it is کتک (Katak) or کنک (Kank). In the copy of the 'Tarikhi Rashidi' I have it is Katak, and this is the version adopted by Dr. Bellew.

Mirza Haidar gives an account of the destruction of this city of Katak. According to him, the fate of the city had long been foreseen in the gradual advance of the sand; and the Priest of the city repeatedly warned his audience, in the Friday sermons, of the impending calamity; and finally, seeing the danger imminent, he informed his congregation of a Divine order to quit the city, and flee from the coming wrath of God. He then formally bid them farewell from the pulpit, and forthwith took his departure from the doomed abode. He left the city, it would seem, in a violent sandstorm, and hurried away with his family, and such effects as he could carry with them. After he had gone some way, one of his companions (the muezzin, or crier to prayer of the mosque) returned to fetch something left behind, and took the opportunity to mount the minaret, and, for the last time, chaunt the evening call to prayer from its tower. In descending, he found the sand had accumulated so high up the doorway that it was impossible to open it. He consequently had to reascend the tower, and throw himself from it on the sand, and then effect his escape. He rejoined the Sheikh at midnight; and his report was so alarming, that they all arose and renewed their flight, saying "Distance is safety from the wrath of God,"

Such is the story told by a pious Mahommedan regarding the evil consequences of rejecting Islam. But a similar tale is told by the Chinese of another town, at or near Pima, which was destroyed in a somewhat similar manner in the sixth century A.D., in consequence of the neglect of the worship of Buddha. On that occasion, it is said, that there was a violent hurricane for six days, and on the seventh a shower of sand fell and buried at once the whole city.

From the inquiries made by Dr. Bellew, and others of our Mission, it appears that the large town of Lop, mentioned by Marco Polo, exists no longer; but there are numbers of encampments and settlements on the banks of the marshy lakes and their connecting channels, perhaps there are as many as a thousand houses or camps. These are inhabited by families who emigrated there about 160 years ago. They are looked upon with contempt by true believers as only half Mussulmans. The aborigines are described as very wild people—black men with long matted hair, who shun the society of mankind and wear clothes made of the bark of a tree. The stuff is called "luff," and is the fibre of a plant called "toka chigha," which grows plentifully all over the sandy wastes bordering on the marshes of Lop.

Regarding the present condition of the ancient cities of Lop and Katak, I will here give an extract from the Report of the Yarkund Mission. It is the statement of a Kirghiz of Kakshal, who had travelled over Ila and Kansuh during nearly thirty years, and was in Peking at the time that city was taken by the allied French and English armies in 1860. He had resided as a shepherd for three years at Lop itself. He says (page 46): "There are, besides, two other countries of the Kalmak also called Kok Nor. One is five days' journey north of Orúmchí, and the other is beyond Lop, five days south of Kúchá. This last is continuous with Cháchan on the east of Khotan, and in it are the ruins of several ancient cities, of which nobody knows anything. The principal of these is called Kok Nor. 'Kok Nor' means 'blue lake,' and these several countries are so called because they have such sheets of water in different parts of their surface. But these ruins of Kok Nor I myself have seen. They are on the desert to the east of the Katak ruins, and three days' journey from Lop in a south-west direction, along the course of the Khotan River. The walls are seen rising above the reeds in which the city is concealed. I have not been inside the city, but I have seen its walls distinctly from the sandy ridges in the vicinity. I was afraid to go amongst the ruins because of the bogs around and the venomous insects and snakes in the reeds. I was camped about them for several days with a party of Lop shepherds, who were here pasturing their cattle. Besides, it is a notorious fact that people who do go among the ruins almost always die, because they cannot resist the temptation to steal the gold and precious things stored there. You may doubt it, but everybody here knows what I say is true, and there are hundreds of Kalmaks who have gone to the temple in the midst of these ruins to worship the god there. There is a temple in the centre of the ruins, and in it is the figure of a man. It is of the natural size; the features are those of a Kalmak, and the whole figure is of a bright yellow colour. Ranged on shelves all round the figure are precious stones and pearls of great size and brilliancy, and innumerable yámbs, or ingots of gold and silver. Nobody has power to take away anything from here. This is all well known to the people of Lop. And they tell of a Kalmak who once went to worship the god, and after finishing his salutation and adorations, secreted two yámbs of gold in his fob and went away. He had not gone very far when he was overpowered by a deep sleep, and lay down on the roadside to have it out. On awaking he discovered that his stolen treasure was gone, though the fob of his debil, or frock, was as he had closed it. So he went back to the temple to get others, but, to his astonishment, found the very two he had taken returned to the exact spot from which he had removed them. He was so frightened that he prostrated himself before the god, and, confessing his fault, begged forgiveness. The figure looked benignly on him and smiled; and he heard a voice warn him against such sacrilege in future. He returned to Lop and kept his story a secret for a long time, till a Lamma discovered and exposed him, and he was so ashamed that he left the country."

Now, to come to the manner in which the shifting sands of the Desert have overwhelmed cities and fertile country, I may give my own experience. When I was in Yarkund, in November, 1873, I saw black bricks of tea, old and musty, exposed for sale in the bazaar, and was told that they had come from Khotan. This stimulated my curiosity, and I made inquiry of our friend the Dadkhwah Mahamad Yunus and of our escort, who professed ignorance, alleging that they were almost as strange to the country as the English were to India in the early days of the East India Company. Still, the subject was not lost sight of; and one day, as we were riding over the desert country between Yarkund and Yungi Hissar, I was told that, at a distance of two days' journey, there was a very ancient city buried in the great desert. On arrival at Kashghar I endeavoured, but without success (of which more hereafter), to visit Khotan. I received permission, however, to visit the Kum Shahedan, or Oordum Padshah, shrine of the martyrs; and when spending a rather dreary month of expectation at Yungi Hissar, whilst the party I had despatched to Wakhan were occupied in their most interesting exploration, Dr. Bellew and I determined to make a little voyage of discovery on our own account.

Riding for three hours in a north-east direction from the Fort of Yungi Hissar, through a well-cultivated country, to the village of Saigoon, we suddenly were plunged into an arm of the Great Desert. Our route then lay over hilly ground and wide plains. Here and there we saw small wells, covered over with huts to protect them from sand-storms. The water in all was very brackish. At one well there was a tank and kind of hospice, where the man in charge, following the usual custom, came out with a large loaf of black bread on a trencher and offered us tea. At 5 P.M., after a ride of 35 miles, we came to the shrine of Huzrat Begum, the wife of Hussan Boghia Khan, who was killed and buried here just after the defeat of her husband's army, in the middle of the eleventh century. Here we found a regular hospice, with an inner courtyard and four or five rooms for the better class of pilgrims. Outside were numerous rooms, in a spacious courtyard, for common folk, and a separate cluster of houses for the servants of the shrine. The sheikh, or head of the establishment, is Shah Muksood, an old man of eighty-seven, very hale and jovial-looking. He said he had never been beyond the nearest village in his life, and therefore could never have tasted a drop of sweet water. We learned that there was a buried city, or more probably only a fort, not far off, which belonged to Tokta Rashid, an Uighur chief, and had been destroyed by Arslan Khan more than 800 years ago. Starting next morning with spades and pickaxes, we determined to see what remains of former civilisation could be dug up; and, after a weary search, found broken pieces of pottery, bits of copper, broken glass and china, and two coins, one of which is partly decipherable, and appears to belong to an early period. The discovery of glass is remarkable, as scarcely any is used now-a-days there, and the art of making it seems to be unknown in Kashghar.

We then rode in a northerly direction to Oordum Padshah. At first the road slopes down to a wide hollow, which drains to the south-east, and there rises up the ridge which we had crossed the day before higher up to the north-west. On the way to this, we passed a number of shallow wells and superficial cisterns on the sides of the road. In all the water was so brackish that most of our Indian cattle refused to drink it. "From the top of the ridge of clay and gravel, which here forms a high and broad bank"—I am quoting the description given by my *compagnon de voyage*, Dr. Bellew—"we got a good view of the Desert away to the east, for the ridge soon breaks up and subsides in that direction to the level of the plain. The plain in that direction presents a vast undulating surface, drained by shallow and very wide water-runs, in which is a thin growth of reeds and rough bushes, but no sign of running water. But to the north it presents a perfect sea of loose sand, advancing in regular wave lines from north-west to south-east. The sand-dunes are mostly from 10 to 20 feet high, but some are seen like little hills, full 100 feet high, and in some spots higher. They cover the plain, of which the hard clay is seen between their rows, with numberless chains of two or three or more together in a line, and follow in successive rows one behind the other, just like the marks left by wave-ripples on a sandy beach, only on a large scale. Towards the south-east these sand-dunes all present a steep bank in the shape of a crescent, the horns of which slope forwards and downwards in points to the ground. The horns start from the high central part of the body of the crescent, which, in the opposite direction, tails off in a long slant down to the plain. These dunes cover the whole country towards the north and north-west as far as the eye can reach; but towards the east they cease at 4 or 5 miles to the right of our road, and beyond that distance is seen the undulating surface of the desert.

"From the ridge up to the shrine itself, and next day for some miles further, our path wound amongst and over these sand-dunes. At about 4 miles from the ridge we passed a deserted post-stage, half submerged under the advancing sands. One of the priests of Mazar Hazrat Begum, who was with us as a guide, told us it was called Langar Bulghar Akhund, and said that it was built eighty years ago on an, at that time, open space in the sands, but had been abandoned since thirty years, owing to the encroaching sands having swallowed up its court and risen over its roof. We got down to examine the place, and found the wood-work, the fire-places, and shelves in two rooms, and also a part of the roof in a perfectly fresh and well-preserved state, as if but just vacated. About half the building was buried under a dune, the sand of which stood above the rest of it to a height of 6 or 8 feet; and on each side in rear were much larger dunes, whose regular crescentic form was perfect, and uninjured by any obstruction. At one side of the two rooms still uncovered, and which faced to the south-east, was another room filled to the door with sand, which seemed to have crushed in the roof.

"At Oordum Padshah, where we halted a day, we found some tenements actually occupied whilst in course of submergence; showing that the process is usually a very gradual one, until the symmetry of the dune is so broken by the obstructing object that its loose materials subside by a sudden dissolution of its component particles, and thus overwhelm the obstruction. In this particular instance a chain of three crescentic dunes side by side had advanced in a line across the plain, till one of the outer crescents had struck the walls of the court of the tenement, and, growing up, had in time over-topped, and then overflowed and filled its area by its downfall; whilst the other two crescents at its side, continuing their unobstructed course, maintained their proper form uninjured. The same cause which propelled them gradually forward, also operated to drive the remainder of the broken dune forward, and it would in course of time not only bury the whole tenement, but would ultimately pass beyond it, and resume its original form on the open space farther on, in line with the other two crescents of the chain; thus leaving the tenement more or less uncovered, till it was again submerged by the next following row of similar sand-dunes.

"These sand-dunes are formed by the action of the periodical north and north-west winds, which here blow over the plain persistently during the spring months. And the reason of their progress is this—that once formed, the wind drives forward the loose particles on its surface, so that those on the sides, where there is least resistance, project forwards in the form of long horns, whilst those in the centre ride over each other till they produce the high curved bank between them; and on being propelled still farther, they topple over the bank out of the influence of the wind, but subject still to that of their gravity, which carries them down the steep slope till they reach the ground. And this action, continued for a length of time, is the cause of the gradual and symmetrical advance of the dunes. The rate of their progress it is impossible to determine, as it depends entirely on the varying force of the propelling power, the slope of the land, and the obstructions on its surface. But the phenomenon, as we saw it actually in course of operation, explains the manner in which the cities of Lop, and Katāk, and others of this territory, have become overwhelmed in a flood of sand. And it confirms the veracity of the statements made by the shepherds who roam the deserts, to the effect that in these old ruined sites the houses now and then appear for awhile from under the sand, and again for awhile disappear under it. The idea that the process of burial is very gradual, is suggested by the remarks made by Mirza Haidar, and of the probability of this we had a remarkable illustration in the tenement mentioned above, as still occupied at Oordum Padshah, though the court up to its verandah was already full of sand from the dune which had broken over its walls. Had the court in this case been on the opposite side, and the house been the first to pass under the advancing sand, as we saw at the Langar Bulghar Akhund, it is easy to perceive how, on toppling over the front walls (if it did not suddenly by its weight crush in the roof) it would shut up the inmates in a living tomb.

"That this actually did occur at Katāk in many instances is evidenced by the skeletons and desiccated bodies which are still occasionally seen in unearthed houses, with their apparel and furniture intact and uninjured, as is told with such apparent truth by the shepherds who roam that spot at the present day. The shrine of Oordum Padshah is itself buried in the sand, and poles tufted with yaks' tails mark the spot of the grave. But the monastery, and some alms-houses around, are built on small clear spaces on the plain, which appear here and there amongst the heaps of sand, and form as it were lanes, running in the direction of the march of the sand-dunes. Some of the larger dunes, at the distance of 300 or 400 yards off, lie obliquely upon the monastery; but as they seem to advance here at a very slow rate—twelve years having passed since the dune broke into the court of the tenement mentioned without having yet completely filled its area, which is only 10 or 12 paces wide—the confident faith of the venerable sheikh who presides over it may prove justified. 'The blessed shrine has survived the vicissitudes of eight centuries,' he said, in reply to our forebodings of the danger threatening its existence; 'and, please God, it will survive to the end of the world.'"

I was very anxious after this to visit Khotan and examine the ruins which have been exposed to view, but was unable to carry out my project. I, however, sent one of the Pundits, of whom so much has been heard, to travel in that direction, and I employed other trustworthy men to visit the locality. The verbal reports they brought back, each independent of the other, confirmed all I had heard before.

The inquiries of the Pundit referred chiefly to the routes through Khotan to India, and, unfortunately, he did not direct his attention particularly to these cities. But he brought me two figures, which were found in the buried city near Kiria, the one being an image of Buddha, and the other a clay figure of Hunooman, the monkey-god. These had only just been found, and it was fortunate that they soon fell into his hands, for the pious zeal of a Mahommedan iconoclast would have consigned them to speedy destruction. Another man, Ram Chund, whom I had deputed to visit Khotan, brought me some gold finger-rings and nose-rings, such as are worn in the present day by Hindoo women; also some coins, of which the most remarkable are an iron one,* apparently of Hermæus, the last Greek king of Bactria in the first century B.C., and several gold coins of the reign of Constans II. and Pogonatus, Justinus, Antimachus, and Theodosius. According to Ram Chund the buried cities proper are at a distance many marches east of Khotan; a discovery of buried ruins has, however, lately been made quite close to Ilchi, the chief city of Khotan, at a distance of 4 miles to the north-west. A cultivator, working in the fields, was watering his crop, and found the water disappear in a hole which absorbed it entirely. On digging to examine the hole, he found a gold ornament representing the figure of a cow. News of this reached the ears of the Governor of Khotan, who ordered excavations to be made, and gold ornaments and coins were found. In the month of April 1874, about the time when Ram Chund was there, a gold ornament weighing about 16 lbs. was found. It was in the shape of a small vase, and had a chain attached to it. Rumour declared it to be a neck-ornament of the great Afrasiab, and the finder was declared to have hit upon the spot where Afrasiab's treasure was buried. This, of course, is all pure conjecture, and Afrasiab, who was father-in-law to Cambyses II., occupies in all Central Asian legends, the place taken by Alexander the Great in Asiatic legendary history, or King Arthur in English tales. I hope the time is not far distant when a complete exploration of these interesting ruins will bring to light many more treasures; and it is not only in the neighbourhood of Khotan that these inquiries have to be made.

According to information we picked up from travellers, and confirmed by Syad Yakub Khan, there is a ruined city called Tukht-i-Turan, close to the city of Kuchar, on a hill of bare rock; the ruins are of earth of a deep yellow colour, quite unlike anything on the hill; there are besides a large number of caves, excavated for residence. The city is said to have existed previous to the first Chinese occupation, and to have been consumed by fire, owing to the refusal of its ruler to adopt the Mahommedan faith. About 16 tash, or 60 miles, to the north of Kuchar a large idol is said to exist, which is cut out of the rock. It is 40 to 50 feet high, has 10 heads and 70 hands, and is carved with the tongue outside the mouth. The mountain behind the idol is exceedingly difficult of ascent; game abounds, but, owing to the protection of the idol, cannot be killed. Some very remarkable ruins are said to exist not far from Mural Bashi. Syad Yakub Khan gave us a description of them, but unfortunately not till after Captain Biddulph had visited the vicinity without being aware of the prize almost in his grasp.

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* Probably the iron coin of Hermæus may prove to be the oldest, but it has not yet been completely deciphered. The Antimachus is about 140 B.C., and the Menander 126 B.C. The little figure of Buddha is pronounced by competent authorities to be about the 10th century, so that the submergence of this city in the sand may be dated about 800 years ago.

Not far from the present city of Kashgar is the Kohna Shahr, or old city, which was destroyed many centuries ago, yet the walls, though only built of sun-dried bricks, are standing, with the holes in which the rafters were inserted as clearly defined as if they had been only just used. They reminded me of the holes to be seen in the rocks on the Danube just before approaching the Iron Gates. As all, or nearly so, of the edifices in Central Asia are built of sun-dried bricks, it may seem remarkable that such structures should survive through so many ages, but the extreme dryness of the climate accounts for this. When I was staying at Yungi Hissar, I visited the tomb of Hussan Boghra Khan. It is recounted on his tomb how he had earned the crown of martyrdom by falling in battle against the infidel King of Khotan, whose fort, which stood close by, he had destroyed. I went to see the fort, and found not only part of the woodwork in good order, but even the matting which is put under the earthwork of the eaves of the roof was still visible. According to the date on the tomb, this fort must have been destroyed upwards of 800 years ago.

An interesting question may now be asked: Where do these sands come from? It is a remarkable fact well supported by the evidence of our senses, as well as by the reports of the inhabitants of the country, that all these sand-hills move in one direction, *i.e.*, from north-west to south-east. If I were speaking of a tract of country east of the Great Desert of Gobi, the answer of course would be plain; but I am speaking of the extreme west corner of the Desert, and moreover I will endeavour to describe a still more remarkable circumstance. As we left Kum Shahidan on our return journey we took a westerly direction, and after crossing a sea of sand-hills for some miles came to cultivated ground, which we again exchanged for sand. Judging from what we saw, our theory was that these sands are all gradually moving on, and the parts we saw cultivated will in time be overwhelmed, and other parts now covered will be laid bare. But, following this course for some miles, we should have come to the Tian Shan Range. Does all this sand come from that range? One idea started was that the sand comes from the great deserts in Russian Siberia, over the Tian Shan Mountains. Another idea is that it is raised in the Desert of Gobi, and is carried by a current of air round the basin of Kashgharia.

The idea of the sand coming from the range which immediately bounds the Desert cannot be maintained, I think. For the sand is blown always in one direction, and the particles are very much heavier than the very fine impalpable dust which fills the atmosphere with a haze as dense as a London fog, and which is doubtless raised by the various gusts of wind from the mountains on all sides. The dusty haze falls all over the land, but is not sufficiently thick to bury buildings.

The theory that the sand is brought from a desert in Russia is also, I think, untenable. It would have to pass over Issyk Kul and other lakes and cultivated land, which we know are not thus covered with sand. It would, in fact, have to mount high in the heavens, like a flock of geese, till it crossed the lofty Alai or Tian Shan Mountains, and then alight on the Desert of Gobi, sand being thus attracted to sand.

The third theory, of a circular current of air, seems more probable. I have seen, on a small scale, something of the same appearance on the elevated plateau, crossing from the Changchen-mo Valley to the head of the Karakash River, on the large soda or alkali plain, which is, in fact, the dried-up bed of an old lake, and is surrounded by low hills. When I was encamped in a ravine, about 5 miles from this plain, I observed about 2 P.M. that a dense cloud of white mist rose from the plain. A local dust-storm of a very disagreeable character seemed to be going on. But it did not spread, and next morning when we crossed the soda plain all was quiet. Towards afternoon, however, a storm similar to what we had witnessed the day previously came on, and I believe such storms are of daily occurrence, except, perhaps, in winter. Some of my party, in crossing the plain, came across the remains of the animals and some camp articles, too, partially buried, which, it was said, had been lost or left by Adolphe Schlagintweit in 1857. Now, what I saw there on a small scale may be going on, on a much grander scale, in the large basin of the Desert of Gobi. I may mention here that, in crossing from San Francisco to New York, I observed that the plateau between the Nevada Range and Rocky Mountains is very similar in its features to parts of

Central Asia, and especially to the high regions between the Karakorum and Yarkund.

I have said that an attempt made by me to pay a visit to Khotan was unsuccessful, and this leads me to notice the remarks of a writer in the July number of the 'Quarterly Review,' who gives his opinion that had the surveillance and restraint to which, under the guise of attentions, the Mission was subjected been resisted successfully at the beginning, and had not time been unaccountably lost, a much more extensive exploration of this interesting country might have been made. This able reviewer had probably not travelled in Asiatic countries, or he may have forgotten his knowledge of Asiatic character, and has not weighed sufficiently carefully the responsibilities which fetter those who have the conduct of such an expedition as I had the honour to command. But as the opinions he has thus expressed have been shared by others, who, with an imperfect knowledge of the whole circumstances of our position, have chafed at the loss of apparently easy opportunities for adding to our stock of knowledge, I may here say a few words which will perhaps throw some light on the matter, and explain what the reviewer considers to be unaccountable negligence on my part. However friendly an Asiatic may be, he is proverbially suspicious of the actions of all foreigners. Mr. Shaw, to whom, as the Quarterly Reviewer justly remarks, is due the honour of the first successful advance into that long-closed country, as is duly related in his 'High Tartary, Yarkund, and Kashghar,' an interesting record of his adventures and of difficulties overcome by a happy mixture of boldness and diplomacy with patience and good humour, gives instances of the disappointments to which he was subjected, and he has often recounted to me the manner in which he was tantalised with expectation of immediate liberty of action; but always to be disappointed at the moment of fruition. During his first visit to Yarkund and Kashghar he was kept a prisoner inside the four walls of his house or in his tent, and never entered the city at all. This was, however, a circumstance in no way to be wondered at, but when he revisited the country as the Political Agent deputed by the Indian Government, and after the return of our Mission, when he might be sure of enjoying the fruit of newly established relations with the Ameer, I fully expected that he would travel about the country and accomplish what we had left undone. But it is a fact that Mr. Shaw did not even enter the city of Kashghar, although he resided for several months within a few miles of the city. He has never been inside it or beyond Yungi Shahr, the old Chinese quarter now occupied by the Ameer, and 5 miles distant from the city. The reason he gave me for this was that though he doubtless might have insisted on going there, he abstained from doing so out of deference to the known or supposed feelings of the Ameer; and if in such a small matter he considered it polite to abstain from exercising an Englishman's propensity to satisfy his curiosity, I feel that I have a strong authority on my side. To any one unacquainted with the character of these Asiatics, their conduct is often inexplicable, and most trying to one's patience. Mr. Shaw recounts how the Yarkund officials would come to him in his confinement and propose a visit to the city, or to some gardens in the neighbourhood, and having excited his expectation to the highest pitch, and having gone so far as to fix the time for going and all preliminaries, they would raise some hidden and insuperable objection. I found exactly the same process adopted with reference to myself. On the occasion of my first visit to Yarkund in 1870, the Dadkhwah made the usual offer of perfect liberty of action, but was mightily offended because I took him at his word. On the second visit, I arranged through my friend Syad Yakub Khan for complete liberty to be accorded to the members of the Mission to roam about anywhere within a day's journey of our quarters, leaving more extended excursions to be matter of separate arrangement. We had not been lodged in Kashghar a week before we obtained the permission of the Ameer to visit the frontier fort of Chakmak. Captain Biddulph was allowed to go on an excursion to Maralbashi, and as soon as the weather permitted we took a journey up towards Ush Turfan. During the winter months very extended journeys could not be undertaken; but I was constantly consulted as to my wishes for sending a party to Aksu and to Lake Lop, as well as to Khotan. The Ameer volunteered to make use of Dr. Stolitzka's valuable scientific knowledge, and after having received his report, or specimens of coal, copper, and other ores, proposed that he should be sent to examine the mines. But as in Mr. Shaw's case, so it was in ours; just at the last moment some excuse was raised, and the expedition had to be postponed *sine die*. I find that another great traveller (M. Prejevalsky) details experience similar to ours, and complains of being detained just at the moment of departure, for reasons which he could not discover either then or afterwards; and Schuyler, in his most interesting work on 'Turkestan,' records similar experiences, and I am inclined to think that all European travellers in Central Asia are likely to suffer in the same way until they can discover the secret which the reviewer apparently possesses for overcoming these obstacles. The important journey to the Pamir by Colonel Gordon's party required considerable negotiation on my part; and after it had started, the Ameer sent word to recall it, and I had some difficulty in reconciling the Ameer to Colonel Gordon prosecuting his journey. My application to visit Khotan, after having been sanctioned and every arrangement having been made, was finally flatly refused; and had I insisted on having my own way, it is most probable that I should have found insuperable difficulties put in my path, and it is certain that I should have caused a breach in the friendship it was my object and duty to cement.

Possibly it may be said that all this only shows the hollowness of the Ameer's performance of friendship; and, in fact, I have frequently seen this urged as a proof of the worthlessness of any treaty of amity with the rulers of countries across our border. But I take leave to differ entirely from such opinions. We cannot judge Asiatics as we would Europeans. They do not understand expeditions conducted for purely scientific purposes; and they may be excused for disliking to show all their resources even to their most valued European friends. I cannot do better than conclude my Paper by a quotation from the remarks made by the distinguished President of the Royal Geographical Society:—"We must complain that our reputation in the East takes its complexion from our conquests and progress in India, the history of which, in broad outline, at least, is perfectly well-known in China, if not all over Asia. How we began by asking for a privilege to trade, and ended by annexing provinces, after disastrous wars, is no secret. Whatever explanations or defence we may have to offer as to the causes of this inevitable advance from trading factories to Empire, we can scarcely expect any Eastern sovereign or people to attach much credit to them. We must be content to trade and to negotiate, weighted with the heavy burden of distrust and suspicion.

II. *The Russian Expedition to the Alai and Pamir.*

By ROBERT MICHELL.

[*Read*, January 8th, 1877.]

THE Russian annexation of Ferganah, the patrimony of Baber, who was king of that country in the fifteenth century, known also as the late Khanat of Khokand, gave occasion to a series of military expeditions against the so-called unruly elements of the population, viz., the Kirghiz.

The Kirghiz are a nomad race, who may by courtesy be called warlike only in comparison with the sedentary Uzbegs. The more bellicose are the Kipchaks, another wandering people, whose influence, under viziers of that race, seems to have been, on the whole, always paramount in the Khanat. These two races number about 300,000 individuals within the limits of Ferganah, the Kipchaks being located in the north-eastern portion of the Khanat, and the Kirghiz distributed both north and south, perhaps two-thirds of their aggregate being strewn about the high valleys and over the table-lands on the south, extending across the high latitudinal ranges even to the Pamir.

The Kipchaks having been considerably reduced in numbers between September, 1874, and January, 1875, when Namangan, Andijan, Assaké, and other places were almost wholly burned, or demolished by shells, while their country was thoroughly ravaged, it became necessary to tame the wandering sons of the mystic southern confines of the Ferganah Valley, who, like restless ants, came and went down the valleys of the Alai and over the passes to their unknown pasturing grounds beyond, paying no heed to the fact that the new authorities looked to them for humble submission and for systematic tribute. Their retiring habits, their sulky disposition, their evasiveness, their rude and extravagant notions of inoffensive independence, were contrary to all the well-established maxims of military rule and regular administration; hence the several expeditions to the Alai Mountains in the early part of the present year, when the Kirghiz were taught some severe lessons in political economy—hence also the despatch of the three military columns in July last to the uplands of the Alai and Pamir, over which the ant-like courses of the nomads serve to facilitate communication with Kashgar on the east, with Karateghin on the west, and with the country at the sources of the Oxus, and with Badakhshan, on the south.

How and when the Kirghiz first came to occupy the great table-land separating Eastern from Western Asia is an unravelled mystery. Their original migration from the Da-Kem, or Upper Yenissei Valley, in the Sayan Mountains, must have been effected in very remote antiquity; and they are probably the remnants of the most ancient people in the history of Central Asia. According to Chinese authorities, quoted by those who have inquired into the origin of this people, they are the remains of the Hagas, mentioned by Chinese chroniclers of the fifth century as the relics of a once very numerous and powerful nation, traced back to the second century before Christ. In the fifth century we read of them as excellent carriers on the Muzart Pass; we read of Kirghiz slaves in the time of the Roman Emperor Justinian II.,* who sent an embassy to the far East, under the præfect Zemarchus; but we also read of the Kirghiz in the thirteenth century as composing the vanguard of Chingiz-Khan's great Mongol army of invasion. In the seventeenth century they were found in very diminished numbers in the Upper Yenissei Valley by the Russian Cossacks, who drove the remaining tribes out of that country in the process of exacting "Yassak."* Their language is Turk, with an admixture of Persian, through cohabitation with Iranians, who at one time settled in this central portion of inner Asia. From this it was concluded by several Oriental scholars that their origin was Turk; but Klaproth almost established it as a fact that they belong to the Indo-Germanic family.

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* Gibbon's 'Decline and Fall of the Roman Empire,' vol. iv. p. 104.

The country which the various tribes of these Kirghiz occupy is a part of that particular region in Asia which is least known to us, and which is therefore calculated to arouse the liveliest curiosity.

Until recent times nothing but very vague and confusing data and scientific theory helped towards the delineation of the country north of the 37th parallel to the 40th, between the 73rd and 76th degrees of longitude. Spurious accounts of travel and travestied facts† had made confusion even worse confounded.

From north to south no known traveller besides Abdul Medjid (1861) has ever crossed the Alai and Pamir plateaux, excepting perhaps an occasional envoy from Khokand to Calcutta. On the other hand, from east and west, it was traversed in the earliest period of our era,‡ in the Middle Ages,§ and in the beginning of the seventeenth century.|| In 1838 Lieutenant Wood ascended to one of the sources of the Oxus on the Great Southern Pamir. Colonel Montgomerie's *Mirza*, in 1868, crossed the Little Pamir, which lies to the south of the Great Pamir and Wood's Lake, on his way from Wakhan to Yarkand. Lieutenant Hayward, in 1868, was the first to give us the outlines of its eastern ramparts. Faiz Buksh, in 1870, crossed by the Great Pamir to Sarikol and Yarkand.

The members of Sir Douglas Forsyth's mission to Yarkand in 1873 extended their explorations from the east to about 38° 5′ N. lat., and 71° 50′ E. long. The Russian military expedition of 1876 coming from the north, attained very nearly the 39th parallel. The Russians have now camped on the shores of the (Great ?) Kara-kul Lake; passed by Abdul Medjid; they have

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* Tribute in furs.

† *Vide* 'Journal of Royal Geographical Society' for 1866, vol. xxxvi. p. 248 *et seq.*; and vol. xlii. 1872, Colonel Yule's 'Notes,' at pp. 473–480; and Sir H. Rawlinson's 'Monograph on the Oxus,' pp. 482–512.

‡ Hwui-Seng and Sung-Yun, A.D. 518; and Hwen-Tsang, A.D. 644.

§ Marco Polo, 1272.

|| Benedict Goës, 1602.

ascertained very approximately the situation of Lake Riang-kul; and from the western side they have discerned the mountain-range of stupendous altitude which Hayward in 1869 observed, and laid down from the east, to which the members of the Yarkand mission coincided with the Russians in attributing a height far exceeding 22,000 feet, and which it is now positively asserted is a meridional range—the Imaus of Ptolemy's Geography, the Bolor, Belut, or Belur-tagh of Humboldt.*

The name "Bolor" is repudiated as obsolete since the seventeenth century by Sir Henry Rawlinson and by Colonel Yule; but the range, it would appear, must be re-admitted into the orographic system of Asia.

It was Baron Humboldt's opinion that the so-called Bolor Mountains were a connecting link in the meridional system, traceable from Cape Comorin to the Northern Ocean; but he was five-and-a-half degrees wrong in his reckoning, throwing his "Bolor" a couple of degrees west even of Arrowsmith's transverse range, which the latter took from the 'Apocryphal Travels' recently discovered in the Foreign Office.

Humboldt drew his continuous line of mountains from the Himalayas to the Thian-Shan, in a direction from S.S.E. to N.N.W. From the meridian of Yarkand this is indeed the direction of Lieutenant Hayward's "Kizyl-Yart Range;" and this is as much a watershed between Eastern and Western Turkestan as the ridge which the Pundit Manphul has "appropriately termed the Pamir range;"† but the Pundit's range runs in a direction from S.S.W. to N.N.E.; and taken separately under its distinctive name, it might more correctly be said to bound the Pamir Steppes‡ on the south-east, Hayward's range being clearly their eastern limit in the north.

The name "Kizyl-Yart" does not, however, appear to be applicable to Hayward's "Meridional Range," and would seem properly to attach only to a red ridge, and to a pass in the latitudinal Alai Mountains,§ which Fedchenko has called the Trans-Alais; although Captain Trotter also observes that that is the name by which the range in question is known to the Kashgarians.

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* Now also more commonly known under the name of Bam-i-Dunia, translated into "roof of the world," although, taken idiomatically, it might be more correctly rendered "the crown of the world's head."

† 'Report of the Yarkand Mission, 1873,' p. 285.

‡ Captain Trotter calls it the western boundary of the Pamir steppes.

§ Mahomed Emin had previously stated that the Kizyl-Yart range formed the southern boundary of the Alai Valley. 'Sketch of the Modern History of Turkish China;' Sir Robert Montgomerie's 'Report on the Trade and Resources of the Countries on the North-West Boundary of British India.' Lahore, 1862.

The Pamir, or what is known of it, is so fully described in the 'Report of the Yarkand Mission,' and in Colonel Gordon's book, that I need not recapitulate here, and quite enough may be gathered to throw more light on the subject from the Russian account which follows. The Pamir, the Bam-i-Dunia, or "Roof of the World," a plateau of 8000 to 10,000 feet altitude,[*] intersected by large valleys and crowned with mountain-ranges, attaining heights of 25,000 and 26,000 feet, and perhaps even more, also occurs in the illustration of Ptolemy's Geography. It was his country of the Comedæ[†] to which the approach was at that remote Roman period shown to be only from the north.

The dry mist noticeable on the elevated Alai and Pamir table-lands, and alluded to in the Paper which will now follow, is a peculiar phenomenon which has never been properly elucidated. I have heard it explained as attributable to a peculiar electric condition of the atmosphere, in which the disintegrated particles of sand-dust are drawn upwards during a dead stillness of the air until the attraction ceases, when the mist clears by the dust falling and covering the surface of the earth as with a carpet. It is mentioned by the Russo-Greek Danibeg who, when in Yarkand in 1795, observed in regard to it: "Throughout almost the entire autumn the sky here is clouded. An inexplicable dust, brought no one knows wherefrom, falls like rain, and makes this season very gloomy. It very frequently happens," Danibeg continues to say, "that, owing to heavy moisture, the air is filled with reddish insects, which are called *Korbit*. It is very seldom that those who are bitten by it escape death. When the said dust falls instead of rain the inhabitants know that the year to follow will bring abundant harvests; but should ordinary rain fall; then it is taken as a sign that the next year will be very unproductive; and on such occasions certain customary prayers are said. The said dust descends in such density that even the sun's rays cannot penetrate it, and this sometimes continues seven or eight days. This dust is so fine that it penetrates through the finest aperture."[‡]

The following reports of the recent Russian expedition were written by Captain Kostenko, geographer to the detachment:—

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[*] The Bam-i-Dunia is 11–13,000.

[†] Comedorv Motana Regio. *Vide* lithographed copy of Map to illustrate Ptolemy's Geographical Notions, by Arnold Buckinok, Rome, 1478, and Grigorief's 'Eastern Turkestan' (Russian annotated edition of Ritter's 'Erdkunde'), part ii. p. 60, 1873.

[‡] It was, perhaps, the prevalence of these mists that gave rise to the expression "Cimmerian darkness." And Scythia was anciently called Cimmerian.—*Rennell's Herodotus.*

*The Alai Expedition, led by Major-General Skobelef, commanding the Troops in the Ferganah Region, 1876.**

1.—General Kaufmann, commanding the forces in Turkestan, ordered Major-General Skobelef to organise a detachment which, under his own command, should advance to the Alai, and march into the very heart of the summer pastures of the Kirghiz, and so demonstrate the feasibility of coercing the nomads. The detachment was divided into three columns; the Utch-Kurgan, Osh, and Gulsha columns; which were to proceed by separate routes and form a junction on the Alai.

While pursuing a military administrative object, the expeditionary force at the same time served scientific aims, since it visited countries into which the foot of an educated European had never before penetrated. We know that the Alai abuts immediately on the Pamir, one of the least known parts of the world, and a feature of the greatest interest to every enlightened man, as to every geographer. In view of this, the expedition was furnished with a military topographical party of eight persons.

The astronomical and barometrical labours were entrusted to the geodesist, A. Bonsdorf. Mr. W. Oshonin was charged with the natural history department, and I was commissioned to study the geography and statistics of the region.

On reaching Ferganah, Messrs. Oshonin and Bonsdorf, as well as myself, were ordered to proceed to Gulsha, where we were to attach ourselves to the column which was to be headed by the commander of the expedition in person. This column was to take the main caravan road passing from Ferganah to Kashgar, over the Terek-Davan.

We arrived at Gulsha on the 18th (30th) July, finding that the column had already marched out towards Kizyl-Kurgan.

Gulsha is the Russian most advanced outpost in Central Asia. In the Gulsha Valley, as throughout the whole of the mountainous zone of Ferganah, the rains are as frequent as the winds. Snow falls thickly here in the winter, and the frosts are sometimes severe.

The Gulsha river is in flood in the month of June, when it spreads very widely, and there is no passage across it. Ordinarily, the principal arm of the Gulsha is about 10 fathoms wide, and it may be crossed, though with some difficulty; there is a wooden bridge thrown over it to ease the transport.

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* Translated from Captain Kostenko's communications to the 'Invalide Russe,' No. 206, No. 211, No. 229, No. 235, No. 239, No. 244, and No. 250 for September, October, and November, 1876.

Notwithstanding the wildness of the surrounding country, and the isolation of the place from the populated centres, Gulsha is, in political and administrative respects, a very important point. The Kara-Kirghiz sow their wheat and barley all around Gulsha, and take up their quarters in its vicinity for the winter.

The bed of the Gulsha river is 4100 feet above sea-level.

We started up the Gulsha valley on the 19th (31st) July with a convoy of Cossacks, expecting at Kizyl-Kurgan to join the column which was advancing to the *Bash* (Upper) Alai.

The road passed along the right bank of the river, over the slopes of the hills. Occasionally it ran along ledges, of sufficient breadth, however, to be free from danger, excepting one place, where, owing to a landslip, the horses had to tread carefully.

Major-General Skobelef, in command of the expedition, joined the Gulsha column on the 25th July (6th August) and on the following day the troops advanced to the Alai.

The column was composed of two companies of infantry, one division of mounted rifles, one "sotnia" of Cossacks, with two mountain guns, a rocket company, and a company of sappers.

The road trended up the Gulsha defile, which was very much compressed by the mountains, and which was only in parts covered with a deposit of soil brought down from the mountains, and giving birth here and there to a little verdure. Solitary specimens of the *archa*, or *Juniperus pseudo-sabinus* were observable on the mountain tops and in the hollows, whilst rows of tall poplars, of willows, bramble bushes, &c., ornamented the defile below, fringing the boisterous and roaring torrent.

From Kizyl-Kurgan the road continued to zigzag for the most part along the high mountain ledges, and might have had charms for those who were fond of excitement. The frail, trembling bridges, suspended over the precipices, occasioned no small trepidation, although the men and horses passed in single-file, and at a respectful distance one from the other.

Within 8 versts of Kizyl-Kurgan the detachment passed a place called Yangi-Aryk, where, three months previously, General Skobelef had a serious engagement with the Kara-Kirghiz.

For an extent of 8 versts from the bridge the troops had to scramble over rocks and along mountain sides, losing, however, only one pack-horse, which tumbled down a precipice.

Within 7 versts of Sofi-Kurgan, the valley of the Gulsha, widens, and the road runs through meadows, or between boulders, and passes by copses of tall poplars, in one of which, within 2 versts of Sofi-Kurgan, the detachment halted for the night, after a march of 20 versts, at Kulanka-Tugai.

2.—On the 28th July (9th August), the detachment continued its march to the Alai, marching all the way through a wide defile, and encountering no difficulties, the only drawbacks being the constant fords over the Gulsha.

At first the water in the main channel was up to the men's waists, but further on it was less deep. The Gulsha was perceptibly smaller above the confluence of the Terek-Su, streaming down from the Terek-Davan.

At Sofi-Kurgan, a former Kokand fort, 2 versts from Kulanka-Tugai, the road diverges to the Terek-Davan (pass). The mountains which skirt the Gulsha defile begin to lose in height from Sofi-Kurgan, although the bottom of the valley visibly rises, and at each step one is led to expect an open country and a view of the Alai plateau.

The formation of the mountains becomes somewhat different. Clay, principally red, and mixed with pebbles, becomes the leading element. The slopes are covered with *archa*, which increases in abundance as the ground rises. In the South Kokand mountains the lowest limit of the *archa* is at an elevation of 5000 feet, and the uppermost limit occurs at 10,000 feet height.

Although the *archa* reminds one at a distance of the fir, yet it does not attain the size of the latter, and the *archa* forests of Central Asia bear but a faint resemblance to our European woods.

The defile through which the detachment marched resounded with the voices of numerous birds, the greatest interest being awakened by the call of a certain mountain snipe (*Ibidorhynchus Strutherii*, Gray), which is found in the Himalayas and Thian Shan.

Among quadrupeds along this line of march, the marmot was observed almost at every step.

Towards the end of the first march the detachment emerged from the Gulsha defile, and crossed a small mountain range of soft clay (Kizyl-Kurt, red range), and halted for the night at the foot of it, by the margin of the Gulsha gulley, to which the road again led. The camp was pitched in a picturesque spot, after a march of 28 versts.

On the 29th July (10th August), the main force struck its camp on the Kizyl-Kurt, and followed Prince Witgenstein's flying column to the Archat defile.

A stream runs through the defile, which finally falls into the Gulsha.

This defile, or glen, was found to be the most picturesque of all the glens in the South Kokand Mountains; and it may be here observed that the mountains and valleys of the Semiretchensk region are incomparably more varied and more beautiful than those of the country now in question.

Besides the *archa,* the Archat defile was decorated with meadow-sweet and mountain-ash, with a sprinkling of birch, and with various kinds of brushwood.

The first 8 versts of road were found easy, after which came the pass over the Archat mountains,* a continuation of the Alais. This range is exceedingly steep; the crest of the pass is only 1½ verst from the foot of the mountains and 1500 feet above it. According to barometrical measurement, the absolute height of the pass is 10,300 feet. The peaks on either side, by measurement with the sextant, attain 13,000 feet. The path up to the pass is very winding. Many of the horses lost their footing, and tumbled down the precipices, but their packs were nearly all recovered.†

The Taldyk Pass, further west, over which the Gulsha column should have gone, according to the original plan, is considerably less steep, and may, therefore, be more easily adapted for a carriage-road. The detachment was obliged to follow in the wake of Prince Witgenstein.

A magnificent panorama opens to the view from the top of the pass. In the foreground is the Alai plateau, beyond it rises the Trans-Alai mountain range, screening from sight the least known portion of the Pamir.

The valley, or rather the high table-land of the Kizyl-Su river, which stretched out before us, was skirted on the south by a grand mountain chain, snow-capped throughout its entire extent. Almost immediately opposite the pass rose the peak which the late Mr. Fedchenko called Kaufmann Peak, in honour of the Governor-general of Turkestan.

The descent from Archat Pass to the Kizyl-Su Valley is only about 9 versts (6 miles) long. A rivulet runs parallel with the defile through which lies the descent, and the slopes on both sides are completely bare, while on the other hand the bottom and the sides of the valley are carpeted with a tall, thick, and succulent grass variegated with flowers.

The Kizyl-Su flows near the foot of the descent. The river winds in a broad bed measuring one verst across, and divided into several arms. At this time of the year the depth of water in the main channel is about 28 inches. The water is red (*Kizyl*), from the clay which forms the bed, but it has a good taste and is potable.

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* The same probably which is known to us as "Shart."

† Prince Witgenstein traversed this pass by night without any accident.

After fording the river the detachment proceeded across the Alai steppe, which was thickly covered with feather-grass and "kipetz," which latter, as food for horses, is very nourishing. Numerous traces showed that large herds of cattle had passed, but no living creature was observable for a considerable distance around.

Crossing some narrow, dry troughs, the detachment came to a halt for the night, at a distance of 3½ versts from the Kizyl-Su, on the bank of a small river called the Kitchkene-Kizyl-Su, which is also red in colour. The elevation of the ground is 9300 feet. It was a very cold night; the thermometer fell below the freezing-point, and a hoar frost lay on the ground. When the sun rose, the thermometer rose rapidly with it, and by mid-day the air was quite warm.*

On the 11th of August (N. S.) the detachment marched in a south-easterly direction, to the base of the Trans-Alai range, where Prince Witgenstein's flying column was already occupying a position.

The intervening country is an undulating valley, perceptibly raised towards the Trans-Alai Mountains. Narrow furrows, void of water, intersect it in various directions. Numerous kinds of mushrooms, with the *champignon*, are found in the thick, succulent grass, and these are very rare in central Asia, for they do not obtain either in the Kirghiz steppe or in the Kizyl-Kum, nor are they found in any of the other steppes of Turkestan.

This day's march was one of 12 versts (8 miles); consequently the breadth of the Alai Plain, in the section traversed, is 17 versts (11½ miles). The next night halt was in the sub-alpine zone of the Trans-Alais, where the detachment camped with Prince Witgenstein's column.

Here General Skobelef received the elders of the Alai-Kirghiz.

On the 30th July (11th August) Prince Witgenstein was despatched in advance. His mounted infantry returned into camp, at 11 A.M. on the 1st (13th) August, from a position on Kara-Kul Lake, the prince, with 30 horsemen, having proceeded still further.

The officers who came back stated that the plateau of the Kara-Kul was so much above sea-level that many of the men bled from the nose, while several of them fainted away.

From the position at the base of the Trans-Alai range this troop of mounted infantry had marched about 27 versts (18 miles), to the summit of the pass. There is a small lake beyond the range, called Kizyl-Kul, which is probably the source of the Kizyl-Daria, an affluent of the Kashgar-Daria. The locality is sterile, the surface being either saline or sand—in some places drifting, in others firm. Not a single live creature was encountered on the way. A scattering of gigantic horns of the arkhara* (*Ovis Poli*) was the only evidence of life along this line of country.

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* Warm enough for the officers to retain only their linen frocks.

After crossing a second range of no great altitude, the detachment came in sight of a large lake, the Kara-Kul, lying within 65 versts (43 miles) of the northern base of the Trans-Alai Mountains. The plateau is surrounded by high, snowy mountains. The water of the lake was azure; an island was observable in the middle. The bottom was found to be muddy; the surface was slightly frozen. A river issues from it in an easterly direction, towards Kashgar, which, according to the guides, was only a leisurely ride of six days distant. The flying column found neither fodder nor fuel. Generally speaking, the track pursued on the Pamir is said to wear an aspect of the most extreme sterility and desolateness, giving evidence of a most rigorous climate.

3.—General Skobelef equipped a mounted division of rifles, which he despatched to Prince Witgenstein, who was on the Kara-Kul Lake. It was suggested that I should accompany this flying column, which started an hour after the issue of the order. The men took provisions for six days, and I provided myself with only the strictest necessaries, such as warm clothing, barley for my horses, and a supply of provisions.

We marched out of camp at 9 P.M., when it was pitch-dark, proceeding slowly and carefully, and principally trusting to the instinct of the horses to pass safely over the broken ground, and although the furrows were not deep, their margins were like those of fissures, and the ground was also riddled by marmots. A seven versts' ride over the Alai plateau brought our troop to the Kizyl-Yart defile in the Trans-Alai Mountains, which is formed by a stream of the same name flowing in several branches through the southern portions of the defile in a smooth bed, so thickly studded with boulders that the horses had to tread with great circumspection. Turning to the left along an affluent of the main stream, and proceeding up the second or upper portion of the defile, the obstruction caused by these boulders was found to be still greater. Fortunately, however, the moon had risen before the troop had filed into this rock-strewn valley. These stones are the main impediments along this route, and over the Kizyl-Yart Pass. The top of the pass is 25 versts (17 miles) from the mouth of the defile. The road may be easily made available for wheeled carriages by removing the stones which block up the bed of the river and cover the mountain slopes. The defile is particularly wild and desolate near the pass, the summit of which is at an elevation of 11,700 feet. From the summit of the pass* a view is obtained of the Pamir generally, and in particular of the Pamir *Khargoshi* [of the hare], in the southern portion of which lies Kara-Kul Lake. A mass of bare mountains, snow-capped and otherwise, stretching in various directions, also open to the view, and these seem to be intersected by more or less wide valleys and gorges as denuded of vegetation as the mountains themselves. The descent from the pass is easy and convenient, and is only 2 versts long when it breaks on the wide bed of a mountain stream called Kurun-Sai (dry bed), by the Kara-Kirghiz. Notwithstanding this appellation, a stream runs here in a direction south from north. From the side of the Pamir the foot of the pass is on an elevation of 11,000 feet. The lengthy and wide bed of the Kurun-Sai merges into the very long Zak valley, which extends from east to west.

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* This is the female; the male is called galdja, or *ghulja*, according to Mohammed Emin.

The valley widens to an extent of two versts. Throughout its entire extent the bottom of the valley is covered either with boulders or with sand, friable and firm. The series of mountains enclosing the valley do not attain the height of perpetual snow; they are bare and rocky, and being composed of argillaceous sandstone, are wholly covered with *detritus*. At right angles with this valley the mountains are broken by transverse valleys. Through the break in these mountains (12,000 to 13,000 feet) snow-capped mountains are visible to right and left. The valley extends 20 versts (13 miles) gradually rising to the east, terminating in low ridges of conglomerate. Here an elevation of 11,700 feet is attained. From the summit of this pass, the descent is into the hollow of the Kara-Kul Lake, and the eye takes in the wide basin of the lake encircled by mountains. These mountains are mostly snow-capped, especially those on the east, and it is only on the west and north sides that a break in the snow-line is observable. The aspect of the hollow, with the large azure lake and its elevated islands, is very grand.

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* The tombs of two Kara-Kirghiz saints are noticeable on the summit, the largest of which is ornamented with the horns of rams and of arkharas, with tatters of clothing, &c. Several snowy peaks are visible on each side of the pass, but these hardly rise to 14,000 feet.

After a gradual descent of 12 versts (8 miles) we came to a halt for the night on the bank of a small stream flowing into the lake at a distance of 2 versts from its mouth.

On the following day, August 3rd (15th), I undertook an expedition to the island. A considerable portion of the lake is occupied by islands and necks of land having the appearance of a high longitudinal ridge intersecting the lake from north to south. The largest of the islands adjoins to the north shore, being connected with it by a narrow neck of land, like a bridge, about 250 fathoms long, and about 10 fathoms wide. This neck is considerably raised, being formed of a sand deposit brought by the prevailing north wind. The island is 8 versts long by 4 versts wide, and consists of sand hillocks covered with fragments of mica-schist like flattened skulls. Large masses of this schist project here and there from the tops of hillocks, being set up almost vertically. The hillocks rise about 600 feet or 700 feet above the lake, so that both sides of the lake are visible from their tops. The surface of the island is sterile, which renders it quite unfit for habitation by man; yet men and beasts evidently frequent it, for I discerned the traces of men and horses, and a fresh hare-track. A great quantity of antlers of the *Ovis Poli* or arkhara, with the skulls of those animals, lay scattered about. I counted eight pairs. The narrow strips of low land projecting into the lake were in parts covered with verdure; from the quantity of feathers about, large flights of birds, such as wild geese and ducks, as well as gulls, evidently alight here.

The dimensions of the island seem to be increasing, for there would appear to have been lakes and bays over some of the low land. The surface of these depressions is now covered with magnesium, which the sand has not yet had time to cover, and which glistens painfully to the eyes, like snow. A rude piercing wind blows daily from the north, beginning at 2 or 3 P.M. I never experienced more violent gusts. The hard sandstone exposed to the wind is strongly affected by it. Some of the rocks are perfectly drilled. In spite of the violent gusts of wind, I ascended to the top of the highest elevation, and was well rewarded for my pains. A magnificent scene opened to the view. The mountain circle seemed to spring directly from out of the water, proudly looking at its own reflection in the glassy lake whose blue waters lave the feet of the heights. In a direction due south, and in prolongation of the island upon which I stood, there stretched a high sand ridge, separated from the island by a strait 1 verst wide and 5 versts in length. This ridge was at one time an island, but is now a promontory. It appeared to me that I was in the centre of a gigantic crater filled with water. The snow-wreath of this crater was incomplete only at one point; but this hiatus was made up by a mountain range in the back-ground.

During the 3rd (15th), 4th (16th), 5th (17th) of August, I and Colonel Lebedef, of the Corps of Topographers, made an exploration of the lake on three sides, Colonel Lebedef making a plan of the entire lake, and determining the southern unexplored portion by means of *notches.* The configuration of the lake was in this wise laid down. Being divided by the above-mentioned ridge, the lake consists of two sheets of water eastern and western, connected by means of the strait already alluded to. The length of the lake is 22 versts (from north to south), and the breadth, along a line passing through the strait, is 17 versts (from east to west).

The lake has not a single outlet,* but, on the other hand, it receives several streams issuing from the mountains, all of which are fordable. The lake had evidently extended some way up the flats through which these rivers run, and in some places the margin of the lake is 10 versts from the bases of the mountains, as on the eastern side, while in some this is reduced to 6, 4, and 2 versts. On the western side the mountains rise from the water's edge, projecting into the lake in the shape of capes. Owing to this, one has to ascend and descend the spurs, on the western side, in order to pass round the lake. The approach to the lake is easy; the soil is sandy. The water is exceedingly cool and clear, even when agitated. To the taste it is somewhat bitter, so that, when thirsty, horses can very well drink it. There are fish in the lake, and I saw many little ones in the shallows. The great number of water-fowl skimming the surface also proves the presence of fish in the water.*

The flat beach along the courses of the tributary streams is covered by a thin but nourishing grass, which affords sufficient if not abundant food for beasts.

It is this grass that gives pasturage to the herds of the nomads who from time to time visit the lake. According to the natives attached to the column, some of the Itchkiliks, Naimans, and Taiti tribes of Kara-Kirghiz camp here. But during our stay on the shores of Kara-Kul we did not see a single soul, al there were numerous signs of men and domestic and the *kisiak*, or *tezek*, found on these spots was used as fuel.

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* Kara-Kul Lake, and, generally speaking, the portion of the Pamir which has now been traversed, are among the least known portions of this world. In reference to the Kara-Kul there have been only surmises. On Petermann's excellent map, attached to 'Fedchenko's Travels,' Kara-Kul Lake is shown as giving an outlet into the Kashgar-Daria, *i.e.*, to the east. Colonel Yule inclines to the belief that it has an outlet to the Oxus, *i.e.*, to the west. There are geographers who suppose that the Kara-Kul has two outlets, one east and the other west. The result of my exploration shows that neither of these three speculations is correct.

During the day the air was hot, but at night the thermometer fell to zero (Cent.). We were informed by the natives who accompanied us that it rained very rarely in the hollow of Kara-Kul Lake, which lies 11,000 feet above sea-level. In the summer time rain generally resolves itself into snow pellets. In the winter, the snow which falls is generally swept away by the strong winds.

As an interesting particular in reference to this lake, I will cite native testimony to the effect that once a week, on Fridays, the level of the lake rises. This is not an impossibility, and I had an opportunity of verifying the statement on the Kara-Kul, for the river by which we camped rapidly filled on Thursday night, and on the following morning it was swollen twice again as much as it swelled on any other day.

4.—As no order had been received to return to the Alai, I was authorised by Prince Witgenstein to lead an exploring party to Lake Riang-Kul,* in the Sary-Kol district, towards the Kashgar boundary. The situation of the lake and of the district was in a measure known to the Prince from the accounts of a native who happened at the time to be with the main column, so that I was obliged to go on without a guide. Provisions were taken for three days. Our little party started on the 6th (18th) August, at 10 A.M., marching along the eastern margin of Lake Kara-Kul.

The road passed over a wide plain between the margin of the lake and the base of the snowy range bordering the lake. This plain was from 5 to 6 versts wide, but contracted at one point to only 2 versts.

The surface, for the most part, is friable, sandy (from a saline admixture), and closer to the mountains it is of a sandstone formation, or simply rocky. A great number of little lakes, or lagoons, separated from the big lake by strips of land differing from the soil of the beach, confirm the belief in the rapid exsiccation of the Kara-Kul. Having marched 24 versts (16 miles), and crossed several mountain streams running into the Kara-Kul, we halted for the night in the mouth of a defile emitting one of these streams.

On the 7th (19th) August, we kept to the plain for 4 versts further, and then turned into Ala-baital (speckled mare) defile.

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* *Riang*, or *Rang*, is a goat of the fine woolly species. The *Rang* is, according to Colonel Gordon, the *Ibex* (see 'Roof of the World,' p. 159).—[H. Y.]

The route lay upwards along the bed of the rivulet, which in some places ran underground. The defile, scattered with more or less big boulders, had an even ascent, but the farther we went the more steep was the rise. At a distance of 6 versts (4 miles) from the entrance into the defile, we attained the summit of the pass, which is 12,000 feet. The mountain sides of the defile, as well as the pass, are composed of soft substances, covered in every part with fragments of schist. During the ascent we saw hares, and on the crest of the height adjoining the top of the pass we observed a herd, eight head, of wild goats. We also saw eagles and crows. The view from the top of the pass was similar to that from the summit of the Kizyl-Yart.

A steep ascent of 5 versts brought us down into the valley of the Chon-Su River, at the point of the confluence of its affluent, the Uz-bel-Su.

The wide (2 or 3 versts) valley of the Chon-Su,* extends from south-east to north-west. The valley of the Uz-bel-Su, the right affluent of the Chon-Su, opens into the main valley at an obtuse angle within 20 versts (13½ miles) of the efflux of the Chon-su; so that the lower course of the latter is at the same time a continuation of the Uz-bel-Su. Lower down, the Chon-Su turns abruptly, and falls into the Kara-Kul at its southern extremity.

After halting at the point of the confluence of the Uz-bel-Su and Chon-Su, we followed up the course of the first-named, going due east. Having the character of all mountain streams, this rivulet runs a course of about 31 versts (20⅔ miles) without any deviation from its original direction. In its lower course it is very much confined by mountains of no great height, which are composed of red clay and conglomerate, the road being obstructed by boulders and stones; further on, however, the valley opens out to widths of 2 or 3 versts, with a flat smooth surface, gradually ascending eastwards. The mountain chains to right and left rise to 2000 and 3000 feet above the valley; those, however, on the left or south side being the more elevated, attaining to 15,000 and 16,000 feet above the level of the sea, and so rising beyond the snow-line. The mountains are composed of soft formations, covered with fragments of schist, which glitter in the sun. The declivities are bare and sterile, as is also the surface of the Uz-bel-Su Valley. Small patches of grass, in some places very succulent and feeding, occur only on the banks of the Uz-bel-Su, and along the little streams pouring down from the mountains. It is this verdure which enables the nomads to feed their cattle, and we saw traces of their passage all the way up this rivulet: indeed, we mostly advanced along a beaten path, which must be taken to represent the high road from the Alai by Kara-Kul to Sary-Kol and to the Kashgar confines.

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* Meaning "big river" in the dialect of the Kara-Kirghiz.

The mountain ranges on either side of the Uz-bel-Su Valley unite at the sources of that river, and so form the Uz-bel Pass, separating the basin of the Kara-Kul from that of the Sary-Kol, and generally speaking from the rivers forming the Tarim-Gol.

Two magnificent views are obtained from the summit of Uz-bel Pass (12,500 feet above sea-level); one towards the west, with the entire valley of the Uz-bel-Su clearly defined, and of the lower course of the Chon-Su, terminating with a snow-capped range of 16,000 to 18,000 feet height, and closed as by a crenellated wall.

In front, towards the east, lies the valley of one of the sources of the Kashgar-Daria. This high valley, like the one we had just traversed, is also skirted by mountains of no great height; those on the right or south side being again higher than those on the left, and in some parts capped with snow. This valley, a long way ahead, seems barred by a grand mountain range, rising considerably above the snow limit. This is doubtless the range which is mentioned by Colonel Yule, in his sketch of the geography and history of the sources of the Amu-Daria, and which forms the eastern boundary of the Pamir plateau, dividing it from Eastern Turkestan. Referring to Mr. Hayward, Colonel Yule says that the peaks of this range attain 20,000 to 21,000 feet. It appeared to me that the range was much higher than this would imply, and that the peaks rise to about 25,000 or 26,000 feet.* The distance from Uz-bel Pass to this mountain range is about 80 versts (53⅓ miles). Beyond it lies Kashgar 60 versts (40 miles) farther. My view of this high, snow-capped range settles one of the most important questions relating to the geography of Central Asia, that is, the question of the existence of a meridional range laid down by Humboldt, and named by him the Bolor Mountains. In recent times Russian travellers—Messrs. Severtsoff and Fedchenko first, and then Englishmen—denied the existence of the above mentioned mountain chain, arguing that the Thian-Shan and Himalayan systems combined to form the block which Humboldt took for a meridional range. It was the opinion of the above-mentioned scientific explorers, that the connection of the two gigantic mountain systems was by means of a series of ranges mainly extending from east to west. Fedchenko, who visited the Ferganah Valley, the Alai Mountains, and the Alai plateau in 1871, came to the conclusion that the construction of the Pamir was similar to that of the tracts which he had seen, *i.e.*, that it was composed of latitudinal valleys, skirted by mountains running parallel, and he positively disputed the existence of meridional ranges. We shall see, by and by, that the construction of the Pamir is quite of another kind, and the meridional range bounding the Pamir on the east I saw with my own eyes from the summit of the Uz-bel Pass. The discovery of this range is, at all events, an important acquisition to geographical science. It would be proper to give this range the name of "Constantine," in honour of the august patron of geographical science in Russia.

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* The late Mr. Fedchenko disputed the existence of a meridional range on the east side of the Pamir. He said that Mr. Hayward had simply taken the abrupt side of the Pamir for a transverse mountain range, having seen it from the Kashgar side in the month of March, when it was covered with snow. I saw this range from the opposite side, on the 7th (19th) of August, and it impressed me with its grandeur.—*Kostenko.*

It was ascertained, by inquiry, that the distance from Uz-bel Pass to the small lake of Riang-Kul was held to be 3 tash (24 versts = 16 miles), and from the latter to Sary-Kol, 1½ tash (12 versts = 8 miles). The name Sary-Kol,* meaning yellow hand, is conferred on a locality including a valley and a river. Natives assert that the valley is occupied by a considerable number of nomads. The stream pouring down eastwards from Uz-bel Pass falls in with another at the foot of the pass, forming a tolerably large river, which is said to flow through Riang-Kul Lake, and to run thence into the Kashgar dominions under the name of Sary-Kol. This, however, requires further confirmation. Strongly as I desired to push on to Sary-Kol, I could not do so for lack of provisions. After spending the night at the foot of the Uz-bel Pass on the other side at the outflow of the Kashgar River, I resolved on the next day to return to Kara-Kul.

On the 8th (16th) of August we recrossed Uz-bel Pass and halted at the sources of the Uz-bel-Su, where Mr. Bonsdorf, the geodesist, determined an astronomical point.

In reference to the pass, I have to observe that, although it is high, it is easy of ascent. It has the appearance of having been hewn out, and presents no difficulty either up or down. One might cross it in a carriage. It is composed of red clay, covered with pebble-stones. From the bases to the top the height is 1000 feet. The adjoining peaks reach an elevation of 14,000 feet, so that they rise only 1500 feet above the summit of the pass. Small streaks of snow lie on the peaks. I may generally remark that, throughout the extent of territory which I traversed, the snow-line on the north is at 14,000 feet, and at 15,000 to 16,000 feet on the south.

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* "Head of the Mountain," according to Colonel Gordon, who derives it from the Persian Sar-i-koh ('Roof of the World,' p. 820).

Passing down that day along the course of the Uz-bel-Su, the detachment halted for the night at the confluence of that rivulet with the Chon-Su, at the foot of the Ala-baital Pass, and at the mouth of the little Chon-Su defile. On the 9th (21st) August, with a view to avoid the Ala-baital Pass, we determined to return to camp on the Kara-Kul by way of the little Chon-Su defile. Here we found the road much more convenient, and not at all longer than that over the pass. Although this defile bears the name of Chon-Su, yet the rivulet so called does not flow through it. At the same time the pass in the defile is hardly noticeable —one has only to surmount a few hillocks. The mouth of the defile into the valley of the Kara-Kul is but a small hillock, upon which are the tombs of two Kara-Kirghiz saints. On emerging from the defile we turned to the right, leaving on our left the high road to Badakhshan. Thus there are three roads which converge at the above-mentioned tombs, viz., one to Badakhshan, one to Kokand (over the Kizyl-Yart), and the other to Kashgar (over the Uz-bel-Su). We reached the camp at Kara-Kul at about 3 P.M., and on the same day started for the Alai, where, on the next day, we rejoined the main force of the Alai column, camping at Archa-Bulak at the southern base of the Alai range, within 20 versts (13⅓ miles) of the mouth of the Kizyl-Yart defile.

Prince Witgenstein had previously passed up the Chon-Su River in pursuit of Abdulla-Bek, returning by way of the Tuyuk-Su Pass, that is, crossing the snowy range. It was ascertained, on inquiry, that the Aksu-Murghab flows 80 versts (53 miles) in a south-easterly direction on the other side of the pass, after which that river merges on a wide elevated plateau known by the name of Ak-baital (white mare). The extent of this plateau is said to be so great that the mountain ranges which skirt it are not visible from the centre. It is traversed by a large and wide river called the Kara-Daria, and by a road leading to Kashgar and to Afghanistan.

When I was on the Pamir, Lieutenant-Colonel Lebedef made a (semi-)instrumental survey of the ground passed over, and mapped it on a scale of 2 versts to the inch. Altogether he mapped 3700 square versts of country on the Pamir. We passed over the most interesting and least known portion of the Pamir upland.

The following general observations may be made on that portion of the Pamir which we visited.

The Trans-Alai Mountains, having the appearance of an immense white-crested wall, limit the Pamir on the north. Beyond this range extends a high land gradually rising towards the centre. This high land is intersected in all directions by mountain ranges, some of which are snow-capped and others not, but, generally speaking, having only a small elevation above the adjoining valleys and plain surfaces. The plains and valleys, or hollows, do not extend in any one particular direction, and in most cases they are not wide (say 2 or 3 versts); they frequently turn off into side openings. The valleys, as well as the mountain slopes, are bare. They have neither trees, brushwood, nor grass. Small strips or patches of grass occur only along the courses of the mountain streams, and this grass is in some places thick and succulent, affording food for the cattle of the nomads.

The mountains being of a soft formation, all the passes are comparatively low and easy. The streams, pouring down from no great altitudes, offer no impediment. Generally speaking, the roads on the Pamir are very easy in all parts. The ground is either sandy or stony, argillaceous, sandy-salinous or simply salinous. In those parts where the salines have got dry, the ground is covered with a thick layer of magnesium, which glitters like snow. Occasionally one falls in with wet places covered with a thick but not high grass, and wheresoever the ground is soft enough to retain impressions one may observe the tracks of wild beasts. Thus we saw the tracks of wild goats, horses, wolves, and deer. There used to be here an innumerable quantity of arkharas (*Ovis Poli*), but they seem to have been all destroyed by the disease among them in 1869, as may be concluded from the abundance of immense heavy horns scattered over the whole line of country which we traversed. We did not see a single live specimen, and not even the tracks of one. The horns were always found with the skull, and no one seems to have ever seen the rest of the carcass.

There are neither bears, nor tigers, nor wild yaks in the portion of the Pamir over which we passed.*

The birds noticed were eagles, kites, red-beaked crows, and numerous small species.

Notwithstanding the severity of the climate of Pamir, the country is inhabited by nomads, who come in the summer from Kashgar, Shugnan, Karateghin, and other places. They occupy themselves exclusively with cattle-breeding.

The severity of the climate is the greatest discomfort to man on the Pamir. In the summer the days are extremely hot, and the nights are cold. In the beginning (O.S.) of August the thermometer fell in the mornings to 23° Fahr.; the Chon-Su rivulet, by which I passed the night on the 8th (20th) August, froze towards the morning, the ice becoming a quarter of an inch thick. In the winter the frosts are fearful, and drive away the nomads to the valleys below. The winds blow constantly, but they vary in the various valleys; the north wind actually took my breath away when I visited the island on the Lake Kara-Kul. The rareness of the atmosphere is also a source of great discomfort on the Pamir, even in summer, yet the stories of its injurious effects are somewhat exaggerated.*

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* Colonel Yule states the contrary.—*Kostenko.* Mahommed Amin stated that both bears existed and tigers ranged over the Pamir. According to Colonel Gordon, the animals of the Pamirs are *Ovis Poli*, ibex, brown bear, leopard, lynx, wolf, fox, marmot, and hare. See 'Roof of the World,' p. 159.

Doubtless, full-blooded people, and those who are accustomed to spirituous liquors, are liable to bleeding from the nose or to faintness; but to the generality of people the only inconvenience is a greater difficulty in breathing and a stuffiness in the chest; yet one can get used to such an atmosphere. Returning from the Pamir to the Alai, that is, descending from an elevation of 11,000 or 12,000 feet to 8500 feet (the position at Archa-Bulak), we experienced great relief; it appeared to us that we had lost a load from our shoulders; our breathing became more regular, and we felt generally in better spirits.

The Alai, with its thick tall grass, reminding us of our native meadows, seemed to us like a paradise. Nearly the whole extent of country on the Pamir which we visited is roamed over by Kara-Kirghiz, though not in great numbers, and even these hid themselves from us in the mountain gorges.

5.—On the 16th (28th) August a portion of the Alai expeditionary force, viz., the mounted rifles and a rocket division, were moved from the position at Archa-Bulak to the late Kokand fort, Daraut-Kurgan along the Kizyl-Su River. This small detachment, under Prince Witgenstein, marched all the way along the right bank of the Kizyl-Su, skirting the side of the Alai range, which in no part reached the limit of snow, so that these mountains may be said to attain an elevation of about 13,000 to 13,500 feet. The Trans-Alai range, on the other hand, is snow-capped throughout its whole extent; but this range, when the detachment passed, was enveloped in a dry mist.†

A strong wind, raising a blinding sand, blew during the two days' (16th (28th) and 17th (29th) August) march from Archa-Bulak to Daraut-Kurgan (70 versts = 46⅔ miles). The wind (a prevailing wind in the Alai Valley) was from the west, and commenced about midday, subsiding late in the evening. The character of the Alai Valley gradually changes towards Daraut-Kurgan; it gradually contracts by reason of the lower-lying height of the Alai range; the grass becomes poorer, and the ground covered with fragments of rock rolling down from the mountains. Within 30 versts of Daraut-Kurgan the "counterforce" of the Alai Mountains hangs precipitously over the river itself, so that the road passes over the mountain, and then trends over the subsidiary elevation of the Alai range. An innumerable quantity of beaten paths testifies to great migration and transmigration.

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* We were told many wonderful stories in Kokand about the effects of this rarefied atmosphere, and were advised to take with us a supply of sal-ammoniac, or garlic. Colonel Yule speaks of these effects, and mentions them as the causes of the scarcity of population on the Pamir. In my opinion the rarity of the atmosphere is not so great a drawback as are the lack of food for cattle, the barrenness of the land, and the cold.

† These dry mists are a common phenomenon in Kokand and on the Pamir. They are occasioned by a current of air in an upward direction, when an extremely fine dust is raised which carpets the whole neighbourhood.

At Daraut-Kurgan the bed of the Kizyl-Su is still more confined by the sub-alpine elevations, so that the valley is not more than 1 verst in width. Brushwood, however, makes its first appearance here in the meadowy parts.

Daraut-Kurgan is situated on the right bank of the Kizyl-Su, at the very mouth of the Isfairam defile into the Alai Valley, through which runs the Daraut-Su.

Our detachment took up a position half a verst below the Kokand-Kurgan, on the right bank of the Kizyl-Su, and at an elevation of 7400 feet above the sea-level.* Here it was joined on the same day by General Skobelef.

On the following day (18th (30th) August) Prince Witgenstein was despatched up the Tuz-Altyn-Dara, in order to reduce to obedience the Itchkilik Kirghiz, who would not present themselves to the commanding officer all the time he was on the Alai. The Prince took half a company of mounted rifles, and a rocket division. I was ordered to join the detachment, as that part of the country had not been visited. The road passed up the course of the Tuz-Altyn-Dara, which follows a general direction from south to north.†

The river runs through a valley beset by mountains, extending about 40 versts (27 miles) long, and from 1 verst to 2 versts wide, but more open towards the mouth. The lower part of this valley (10 to 12 versts) is a favourite haunt of the nomads. The grass is good and rich, and the clayey soil enables the Kirghiz to cultivate it. But they grow barley alone, which yields five-fold. Wheat is not sown, because it has not time to ripen, snow being usually ushered in by the month of August. In small quantities, wheat is sown on the Kizyl-Su, near the Daraut-Kurgan.

The nomads occupying this river system belong to the Itchkilik tribe of Kirghiz, of the Taïti and Naiman branches. They pass the summer at the upper waters, but their winter habitations, mud huts, and little enclosures, are noticeable at the lower course of the Altyn-Dara. Not a single hut (*yurt*), however, was seen during the progress of our detachment; all the nomads had secreted themselves in the gorges, or had retired to the upper valleys.

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* Fedchenko gave the elevation as 8300 feet.

† The river is called Tuz, after the quarries of rock-salt about 10 versts below the mouth of the river.

The road up the Altyn-Dara follows the right bank all the way, but there is a practicable way along the left bank as well. The river is not deep, and is fordable at all seasons of the year. It runs closer to the left range of mountains, and is not so red in colour as the Kizyl-Su, into which it falls. The mountains on each side, here and there, attain the limit of snow. They are bare and rocky, but merge with the valley in high hills, composed, as is generally the case in the Kokand mountain system, of detritus. These high undulations, or "counterforces," are mostly covered with verdure, which is so coveted by the nomads. Some, however, are partially or even wholly bare, thus exposing their formation and reminding one of *moraines*. The road along the Altyn-Dara passes over these hills; but it is an easy road, except in those parts where the hills abut on the river. In most cases the track passes over ledges and over steep slopes overlooking the river. In one such place we lost a horse, which tumbled, pack and all, down a precipice.

The hills on the right-hand or eastern side are less precipitous; so that the right bank of the river affords more space for the nomads. A great number of pathways on this side bear witness to the number of people and of cattle frequenting the right side.

The river-bed is filled with boulders, and is very narrow, and these boulders and stones occur along the road, especially at the upper course of the stream.

The head-water of this river is remarkable as giving rise to another stream flowing in a diametrically opposite direction. The Ters-Agar streamlet, falling from a snow-capped summit in the left or western range, divides into two at the base of the mountain; one flowing northwards, which forms the above-mentioned Tuz-Altyn-Dara, and the other running due south, preserving the name of Ters-Agar, and reaching the large Muk-Su River. In this way the defile and the source are common to both streams. The pass is almost imperceptible to the eye; its absolute height attains 9700 feet above sea-level.*

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* Up to this time the heights had been measured by means of Parrott's barometers, but on the occasion of this expedition we employed a carefully verified aneroid. Since this aneroid on the way back gave exactly the same measurements, I have every right to consider that the results of my observations are perfectly correct.

On that day our detachment camped on the Pass. A dense fog, accompanied by cold and damp, made us suffer much discomfort during the night.

On the 10th of August the detachment resumed its march before daybreak.

At 6 A.M., so soon as it was possible to begin the survey, I started, pursuing the course of the Ters-Agar, the valley of which differs in character from that of the Altyn-Dara insomuch only as the foreland and "counter-forces" of the range form a plain surface, over which the Ters-Agar streamlet flows flush with its banks.

Following the gentle decline of the defile 5 versts, the stream tumbles sheer into the deep and clearly defined valley of the large Muk-Su River. The view of the Muk-Su Valley, and of the gigantic snowy range closing it on the south, is the most beautiful and the grandest that can be imagined. The picture is changed as by the wand of a magician, and you suddenly behold a deep cavity, in the shape of a leviathan trough, with a smooth surface at bottom, covered with boulders, through which the Muk-Su rushes headlong in innumerable branches. The trough lies between high, rocky, and precipitous mountains, those on the south being at the time covered with snow over two-thirds of their height. Several peaks project from this range, which the natives call Goù, some of them attaining a height of at least 25,000 feet. Two glaciers are suspended from the top of this mountain range, reaching the valley below. Numerous milk-white streamlets purl down under the glaciers. A third glacier clings to the side of a short range which borders the valley on the east.

The northern range has a height of from 14,000 to 15,000 feet, being covered with snow only in parts. It is less steep than the other, and a pathway has been formed over its crumbling side, by which I descended into the valley of the Muk-Su. The northern confine of the valley from which the path begins to descend is 9500 feet above sea-level. This path zigzags between large stones scattered over the detritus, and is 4 versts long. Vegetation occurs here and there on the declivity, represented by the *archa** and by a few very poor little birch-trees.

The bottom of the Muk-Su valley is not wholly covered with boulders. At the bases of the northern range there are streaks of land overgrown with copses of willow, brier, and other thickets. These copses are irrigated either by springs, overflows of the Muk-Su, or by rills from the mountains, and are called "tuga." They stretch at intervals of one verst or half a verst, and mainly afford the Kara-Kirghiz (Itchkiliks) that shelter and means of existence which they seek. I followed the course of the river for about 3 versts, and saw fresh traces of nomadic people; but these had heard of our approach, and had withdrawn towards Karateghin.

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* *Juniperus pseudo-sabinus.*

The Muk-Su is a large body of water, and is not fordable. The head of the river may be said to be at the spot where I came down into the valley, being formed by the confluence of several streams, viz., the Sel-Sai,* the largest of them, which pierces through the southern range (Goù), and flows in a north-western direction; the Koündy, which flows west; the Suok-Sai, which falls into the Muk-Su, bearing a course towards the south-west; and finally, the above-mentioned Ters-Agar, which comes in from the north. The valley of the Muk-Su extends from east to west, with a slight southing (5°).

This valley preserves the same character for 40 versts (27 miles), as far as the Hoja-t-ăb "tuga," after which it contracts, and the road passes over the mountains, where the path, according to the natives, is not practicable to horsemen, on account of the boulders. The river passes into Karateghin, where it joins the Kizyl-Su, and combines in forming the Surkh-ăb affluent of the Oxus.

I am the first European who has obtained a sight of the head-waters of the Muk-Su river. The valleys of the Kizyl-Su and Muk-Su are totally different in character. The first-named river is much longer than the second, and right up to the Karateghin territories it flows through a valley widening out 20 versts (13⅓ miles) and carpeted with grass over its whole extent. This river is not deep, and is fordable at all points as far as Daraut-Kurgan; *i. e.*, throughout a length of 100 versts (67 miles). The water is red in colour, from the red clay in which it runs. The Muk-su, on the other hand, has not so great a length; but is a large body of water and is not fordable. The valley of this river is much narrower (2 versts wide), and is walled in by wild, almost precipitous mountains; the bottom of the valley is mostly covered with boulders; the colour of the water is white-opaque, from its lime bed. The bottom of this valley at the point to which I descended is 8100 feet above sea-level. It is difficult to determine which of the two rivers is to be taken as being the main head-water of the Surkh-ăb. It were, perhaps, more correct to state that the Kizyl-Su and the Muk-Su equally combine within the Karateghin territories to form the great river which flows to the Oxus.

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* "Sai," probably a corruption of "Su," water.

On that day, the 20th August (1st September) the detachment returned to Daraut-Kurgan, where a deluge of rain fell all night.

6.—On the 24th August (5th September) the whole of the Alai force was moved towards Great Karamuk. The vanguard, under Colonel Prince Dolgorouky, composed of three sotnias of Cossacks, a company of mounted rifles, and a rocket battery, started two hours in advance; the infantry and the train, under Prince Witgenstein marched at 8 A.M.

The road to Great Karamuk (28 versts = 19 miles) follows the right bank of the Kizyl-Su. In the vicinity of Daraut (2 versts below Daraut-Kurgan) the valley of the Kizyl-Su narrows and becomes a mountain defile, and the road passes over ledges, here and there bridged over, for about one-third of a mile; it was put in order on the previous day by a party of sappers under Lieutenant-Colonel Resvy.

As there was only this one narrow road over the ledges of the northern range of mountains abutting on the river, the progress of the whole detachment was necessarily slow, reaching the halting-place late in the evening. Although the men and horses frequently slipped over the sides of these ledges or cornices, only one animal was irrecoverably lost.

The valley of the Kizyl-Su from Daraut-Kurgan* is considerably narrower than at the upper portion of the stream; yet it is nowhere less than half or two-thirds of a mile wide. Where the counterscarp of the mountains on either side overhangs the river, the opposite side of the valley is open and flat.

Between these counterscarps the road occasionally leads down to the river-side, where the soil is composed of deposit lying between the boulders which are scattered about; this ground yields a succulent and waving grass, as well as brushwood, and even small-sized trees, such as willow, poplar, &c., which form umbrageous copses. The most fertile portions of the Kizyl-Su valley are at the confluence of feeders. All these places are occupied in the winter by the Kirghiz, and around their habitations the soil is all under cultivation; they sow barley, wheat, clover, and oats.

The fields are usually irrigated by means of canals. When we passed, 24th August (5th September), the sown grass had not all been mown. The greatest fertility is in the localities where the Kok-Su falls into the Kizyl-Su, and it is here that the greatest number of nomad winter habitations is found.

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* Below this fort the Dasht-i-Alai (Alai steppe) comes to a termination, and the locality is simply that of the Alai.

The mountains on the right or north side of the Kizyl-Su Valley are only about 9000 feet high; those on the left or south side are higher, but neither of them attain the snow limit. There are forest growths of *archa* on the forelands of the mountains, and these are denser on the northern slopes of the southern range.

From Daraut-Kurgan the Kizyl-Su receives a large quantity of water from the mountains, and it is not fordable below the mouth of the Kok-Su, 15 versts below Daraut-Kurgan.

The river runs in a great number of channels, the principal stream being 70 to 105 feet wide; the current is exceedingly rapid.

At Great Karamuk the valley widens to about 2½ versts (1⅔ mile), and extends in that form for about 7 versts (4⅔ miles). Here the elevation of the mountains is not so great. The rich meadows in this locality attract masses of Kirghiz, whose winter quarters are scattered all over the place. The river is fringed with trees. On the south-west the valley is bounded by mountains of inconsiderable height, the pass over them being visible from Great Karamuk.

The detachment took up a position at the base of these mountains. According to barometrical measurement, the valley at this place is 6900 feet above sea-level.

7.—On the 29th August (10th September), the detachment marched towards the Kara-Kazyk Pass, *en route* to Vadil.

The shortest and most convenient road from Karamuk to Kokand lies up the Kok-Su River (right affluent of the Kizyl-Su). In order to enter the valley of the Kok-Su from Karamuk, it is necessary to traverse a pass over the Gurundu Mountains, which are of no great height, and which are a spur of the main Alai range. The most direct route into the Kok-Su Valley, over the Gurundu, is about 19 versts (12⅔ miles), of which 10 versts (6⅔ miles) are taken up in the ascent, the remaining 9 versts (6 miles) being descent. The first road conducts over the terraced bank of the Kizyl-Su, which is under cultivation for barley and wheat, and then leads into the wide Djeniké defile, through which runs a stream of the same name, falling into the Kizyl-Su on the right. A series of Kirghiz winter habitations stretches through the defile. Notwithstanding the squalid aspect of these habitations, the evidences of man's presence is gladdening. I had never before seen so thick a cluster of Kirghiz huts in one place. Here the picture is embellished by fields of wheat, barley and lucerne (*djenushka*), and each hut is distinguished by one, two, or three willow-trees or poplars, which give building material, such as poles for ceilings, logs for doors, &c. A peep into any one of these hovels impresses one very painfully with the wretchedness of Khirgiz life; they are more like pigstyes than habitations for man; and yet a sight of a Kirghiz settlement is a great relief to the eye. We see here, at all events, an attempt to pass from a wandering life to a settled form of existence, and anything in the form of a dwelling is pleasing to behold. I felt the effect of this strongly when, after wandering over the Alai and Pamir steppes for six weeks, I exchanged my camp tent for a felt hut, or *yurt*, for two or three days at Daraut-Kurgan. A yurt is one great step towards civilisation in this country; it is roomy, and one may have a fire in it, and make it a warm dwelling.

The pass over the Gurundu is not difficult; the mountains are of soft formation, and are not steep. The summit of the pass is at an elevation of 9509 feet. The descent is equally easy; but the bottom of the defile being choked with stones which have rolled down, the road passes over a rugged surface. The stream falling into the Kok-Su disappears under these piles of stones and emerges only at its mouth.

The Kok-Su Valley, at the point where the stream falls into it, is wide and fertile, but higher up the river the valley contracts. A little suspension-bridge brings it over to the left bank, and it then skirts the stream for the rest of the distance, bringing one to the Kara-Kazyk, one of the principal passes over the Alai Mountains. The characteristic feature of the Kok-Su defile is the rocky crest of the mountains on both sides. The declivities of these mountains are in many places precipitous, and the summits either assume the form of peaks or of rocky ridges. In some places, however, the rocky declivities merge with softer slopes, covered with *archa* forests, in some places tolerably dense, although the trees are not of great size. The trunks of the *archa* or *Juniperus pseudo-sabinus* are distorted, and frequently lie serpentine along the ground.*

Proceeding 30 versts (20 miles) through the defile, we came to a halt for the night at the foot of Kara-Kazyk Pass, where the stream of that name, rushing down from the summit, falls into the Kok-Su. Here, at a height of 9500 feet, all vegetation ceases so that both the bottom of the defile and the mountain foreland are quite bare.

8.—On the following day, 30th August (11th September) I advanced at 8 A.M. to Kara-Kazyk Pass. The path leads all the way over piles of stones which have fallen from the rocky sides of the Kara-Kazyk defile. These sides are precipitous and grand. In some places they overhang the path. The torrent sweeps with a tumultuous noise over the obstructing boulders, and near its mouth it falls in picturesque cascades. The wildness and imposing grandeur of the scenery in the defile increases as one ascends the course of the torrent. The rocks are steeper and the peaks more pointed; the path, however, does not lead by any dangerous ledges but runs over a soft soil. Within 3 versts (2 miles) of the summit of the pass there is a very steep ascent to the top of the main ridge, and the path is zigzaggy. During my ascent the pass was covered with snow which lay on the mountain sides three or four versts below the crest. The reflection of the light was blinding. My horse continually slipped on the down-trodden snow, yet I reached the top without dismounting. For pack-animals and for weak horses this pass is somewhat dangerous, as was evidenced by many a carcass lying in the precipices. The summit of the pass is at a height of 12,600 feet; the crest is very narrow, having the appearance of a wall about 28 inches thick. It is formed by a sort of opening (about 35 or 42 feet wide) between a couple of peaks cloven into a comb shape. The crest of the *Tarak* in the Alai range further west is probably the same, *tarak* meaning comb.*

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* "In Tashkurgan district the juniper is of a gigantic size."—Gordon's 'Roof of the World.'

The Kara-Kazyk pass has received its name from a high peak visible to the left, which, in some degree, bears a resemblance to a stake (*kazyk*). Kara-Kazyk signifies black-stake. The view from the top of the pass is very striking in its wild grandeur. A mass of rocky ridges and peaks seem to be crowded together in the greatest disorder, forming a remarkable picture of dreadful chaos. Some of these ridges and peaks wore, as it were, a shroud of snow, which glared most painfully in the sun; those on the north were as yet free from snow, and wore a greyish or brown hue.

The descent from the pass was more steep even than the ascent, in consequence of which the path on the other side had more turnings. Horses and men slip and fall, and the horseman who foots it is wise. The descent is 2 versts (1⅓ mile); the road then trends over immense hillocks, which are nothing but tremendous piles of stones. From under the last of these stone piles issues a stream of water, which further on forms the Shah-i-Mardan River. The characteristics of the defile of this river are very much those of the bed of the Kok-Su, already described. The sides are rocky and precipitous, with a foreground of soft undulations covered with *archa* forests which stretch for an extent of 20 versts (12⅔ miles); these forests are tolerably dense, but the trees are of small stature. The long tortuous roots are in many places exposed, seeming to seek for something to clutch at. After the *archa* forests there is a stretch of deciduous trees, such as birch, willow, barberry, mountain-ash, and other brushwood. But all this underwood fringes only the bed of the river.

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* The most direct route from Ferganah to Gharm in Karateghin lies over the Tarak, but this is a very difficult pass.

In the upper portion of the defile the path runs along the right bank of the river, and then frequently changes sides, sometimes even lying in the bed itself. It is an easy path only in the upper portion of the defile; further on it runs over narrow ledges or crumbling mountain sides.

I had to ride very fast in order to escape the darkness in the defile, and to reach Shah-i-Mardan, which is considered to be about 45 versts (30 miles) from the pass. Regardless of the narrowness of the path on the ledges and cornices, I trotted my horse at a good pace. The little village of Shah-i-Mardan was still 10 versts distant when I was enveloped in darkness. To me this was a new experience in the mountains. The mountain side seemed more precipitous, the precipices more yawning and deeper. The darkness was so intense that I was obliged to trust to the instinct of my horse, until at last, at 11 P.M., I reached the kishlak, where, with my travelling companions, I found quarters for the night in a tea-shop, or "chai-khané."

Shah-i-Mardan is well known for the loveliness of its situation. It nestles in a pretty spot at the opening of several defiles, and, as it is not confined by high mountains, the view from Shah-i-Mardan is charming and varied.

The beauty of the scene is enhanced by the animation lent to it by a scattering of hamlets and by fields and gardens in the hollow of the river and on the undulations. It may not be difficult to imagine the effect produced, after a long sojourn in a wilderness occupied by nomads alone, by the aspect of this lovely settlement, the houses of which were drowned in a sea of gardens, above which towered a great number of tall spiral poplars, whose heads seem hidden in the clouds.

Having passed a day at Shah-i-Mardan, I left on the 1st (13th) September for Vadil. The road follows the left bank of the stream. The mountains decrease in height very considerably, and the defile is tolerably wide. A continuous chain of hamlets stretch from Shah-i-Mardan to Vadil (24 versts = 16 miles) in the hollow; there is a break only within a few versts of Vadil, where the rocky mountains close in, and where the road passes over broad ledges. It is a cart-road all the way. At Vadil the mountains fall away much more, and the defile comes to an end, so that Vadil blocks the entrance.

Vadil is in the Ferganah valley, and is the first populated place of large dimensions which one arrives at coming from Alai. It is situated at a height of 3000 feet, and lies embedded in a mass of luxuriant and shady gardens. At present Vadil is in the centre of the Chemion district, according to the new administrative subdivision of the Ferganah valley since its annexation to the Russian Empire.

NOTE.—In correction of several of the figures of heights given in Captain Kostenko's letters on the Pamir, that officer communicates to the 'Invalide Russe' the following revised Table of Altitudes:—

	Feet.		Feet.
Gulsha	5,100	Uz-bel Pass	15,200
Kizyl-Kurgan	5,600	Foot of Uz-bel Pass	14,300
Sofi-Kurgan	6,600	Position at Archa Bulak on the Alai	10,000
Archat Pass	11,900	Daraut-Kurgan	8,000
Halting-place on the Kizyl-Su	10,100	Great Karamuk	7,400
Mouth of Kizyl-Yart defile	11,400	Gurundu Pass	10,600
Kizyl-Yart Pass	14,000	Kara-Kazyk Pass	14,400
Kara-Kul Lake	13,200	Shah-i-Mardan Village	4,400
Ala-baital Pass	15,400	Vadil Town	2,800
Confluence of the Uz-bel-Su and Chon-Su	13,300		

The figures being altered, some of the deductions require corresponding modification. Thus the snow-line on the Pamir is now shown to be higher than is stated in the paper, Captain Kostenko raising it to 16,500 feet on the northern declivities, and to 16,500. or even 17,000, feet on the southern.

On the Alai Range the height remains unchanged at 14,000 feet.

III.—*Recent Journeys in Madagascar:* described by Rev. JOSEPH MULLENS, D.D.

[*Read*, January 22nd, 1877.]

DURING the past two years, among the journeys undertaken by English missionaries in Madagascar, five have been of unusual importance. They have been taken over entirely new ground; they have concerned localities respecting which we had no definite information, though it was greatly desired; and their results tend both to increase and render more definite the knowledge recently obtained of the interior of Madagascar. I propose to give a brief outline of each of these journeys, and then sum up the conclusions to which they lead.

1. IKONGO IN SOUTH-EAST MADAGASCAR.

The Betsileo Province forms the southern portion of the central plateau; and on its eastern side it is bounded by the Great Forest and the southern extension of the broad terrace of Ankày. The forest is in two lines, and the scenery it presents is some of the finest in Madagascar. When Radáma—about 1820—after much obstinate fighting, conquered the Betsileo tribes, and so extended the Hova dominion towards the south, a portion of the forest tribes successfully resisted him. The Tánàlas submitted, and in the fortress town of Ambohimànga the Princess Ráovana now rules as governor in the name of the Queen. South of these Tánála lives a hardy branch of the same tribe, the Ikongo, who hold possession of an immense isolated hill. During Radáma's wars they sustained one siege of eighteen months, and subsequently another of twelve months; and in each case resisted with success. The Hovas have never set foot on the Ikongo hill; the Ikongo have a deep dislike to them, and they maintain their liberty and their isolation with great tenacity to this day.

Naturally this isolation cuts them off from the improvement which is now rapidly raising the Betsileo as well as the Hova tribes. The Betsileo Mission has been established only eight years, and its members have been anxious to gain access to the Ikongo people. After sending and receiving friendly messages, on October 1st, 1874, Mr. G. A. Shaw, the Superintendent of the Normal School in Fianárantsoa, having received a definite invitation from the king of Ikongo, set out to pay him a visit. Passing Imáhasóabé, he reached Morókona on the eastern edge of the plateau and entered the Great Forest. Of this Mr. Shaw says:—"This is certainly the thickest forest I have been into in Madagascar, and is one continuous mass of trees from Morókona (which we left about nine o'clock) till we emerged at Aviàvy at five. In it we met no one, nor did we see a single house of any description, except just within the entrance at the south-east end of our route. I saw no animals but birds; though there were evident marks of great numbers of wild hogs; the turf having been torn up in many places by these animals in their search for grubs and roots. About halfway through this belt of forest a pair of mountains of strange shape rear their heads far above the surface of the plain. There is such a resemblance between the two that it would be difficult to distinguish one from the other. The northern sides rise precipitously from the plain to the height of 1000 feet, the south and west sides are covered with thick brushwood. On the ridge between these two hills, over which we had to pass, we had a splendid view to the south-east. A deep valley lay before us, with the hills rising high on the opposite side, all densely covered with trees; and from near the summit of one of them a large stream came tumbling and roaring down into the valley." He adds the following fact, which will remind an

Indian resident of the jungles of Ceylon:—"About an hour before we were out of the forest a slight shower came on, which brought from the overhanging leaves and grass thousands of minute leeches. The creature is small, but able to elongate itself to nearly four times its natural length. It is evidently a leech, and bites like one; the men were terribly bitten about the legs and feet; on the return journey I picked off thirty from my own, but they clung most tenaciously, and my ankles and feet were covered with blood. The village of Aviávy is pleasantly situated on a small round hillock, in a narrow plain, surrounded by hills, well wooded to the top. The mountain on the north is high, and the sea is visible from its summit."

After being detained by the caution and the suspicions of the King and his counsellors, Mr. Shaw passed on southward, and reach Ambóhitsiválaná at the foot of the fortress hill. He was treated most kindly and hospitably, but was carefully and constantly watched. During his detention he kept his eyes open, and observed many things of interest. He says :—

"From the summit of a hill overlooking Ambóhitsiválána I obtained a good view of Ikongo. It consists of a long, flat-topped hill, very precipitous on all sides, especially on the west and north, where the faces of the cliffs are perpendicular masses of smooth granite. The hill is about five miles long, and about 1000 or 1500 feet above the level of the plain. On the summit I could see five towns, the one to the south being apparently nearly as large as Fianárantsóa, with some good-sized houses. Two streams of water take their rise near this southern town, and flow along the whole length of the hill, descending in a clearly defined cascade, near the northern extremity. It is principally owing to this fact that the people can effectually defy all siege, as they can plant and sow as well on the top of the hill as in the valley, whilst the only ascent is so narrow and difficult as to require but few to guard it against an assaulting army. During the time of peace, and when they fear nothing, these towns are not occupied to any great extent, the people preferring to live in the villages on the plain below.

"The women here (he says) cannot weave; and the only covering of the people consists of mats and bark beaten out into a thin sheet. Every man travelling for even a short distance is invariably armed with one or more spears."

Mr. Shaw had at length a most friendly reception from Ratsiandráofana, the king of Ikongo, and it was arranged that teachers should be sent to instruct his people. In June 1865 Mr. Shaw took the teachers, and again visited the King and his people. "Quite early in the morning the King came to my tent without any soldiers or followers, and stayed chatting till dinner-time. He was much pleased with the teachers, and hoped they would soon feel at home with him and his subjects. He would provide a house for them, and his people had agreed to furnish them with rice. He examined with interest all the things I had brought with me. My iron stretcher was a great marvel; table, bedding, boots, compass, watch and gun, all came in for a close inspection. His requests were limited to an empty bottle, some soap, salt, beads, and percussion caps; all of which I gave, in addition to the pictures and presents provided by young friends in Glasgow. He then presented me with a shield that he had used in the wars with Imerina. This is considered among them as the greatest honour and mark of confidence which he could give to any one not of his own tribe."

On his return the King gave Mr. Shaw permission to travel by the southern road, so that he saw the whole Ikongo country. "We slept at the entrance to the forest on Tuesday night. On Wednesday morning we found that, although the forest road was much shorter, it was very steep, and was almost one continual climb. On the top of one hill a break in the forest permits a view the most extensive, if not the most magnificent, I have ever seen. Being much higher than the fortress, this seemed at our feet; while for many, many miles the hills undulated away to the east, terminating in a white mist, which the guide said was the sea. He informed us that on clear days the shimmer of the sun upon the water made it easily distinguishable. At about noon we were once more among the brown grass of the table-land, and about ten miles from Ivohidroa, near which we stayed the night. The following night, long after dark, we arrived at home."

2. VISIT TO THE IBARA TRIBES.

The Ibára tribes were known to live on the south and south-west borders of the Betsileo Province. Occasionally Betsileo and Hovas have found their way among them during these recent years of peace; but they have done so in peril; and not seldom have individuals from among the Ibára paid visits to the southern Betsileo towns. Mr. Pillans and I saw such men in the town of Ambóhimandróso, and we could not but be struck by their rude appearance, their uncouth speech, and the lumps into which their hair was rolled. The English missionaries have gradually got acquainted with them; and the tribes have learned about the Englishmen that they were kind, could give medicine to the sick, and were anxious to teach people and make them wise. Occasions were taken for sending messages and little presents to the Ibára chiefs; and at length invitations were received asking the missionaries to pay them a visit. When the ground was sufficiently prepared, Messrs. Shaw and Riordan, on April 27th last, commenced their journey, and left Ambóhimandróso at the south end of the Betsileo Province to enter the Ibára territory. Travelling westward they crossed the ridge which bounds on the west the great rice plain, and also the valley of the Tsimandao, and came on the border of the Ibára country at Tsi-áfa-baláła, a bold rock, 600 feet high and nearly perpendicular on the south side. Next day they passed through the noble granite range, called Andringitra, of which Iváravárana ("the gateway") and Kipaseha form conspicuous peaks; and were struck with the wonderful forms, the size and number, of the granite masses of which the ridge is composed. Apparently the range is like Ibety, the Váva Váto, and other masses of red granite, in the centre of the island. My colleague and I noted the serrated crest of this ridge during our visit; but it was too distant for close examination. Still going west and south through the well watered valley of Isáhanámbo, they came to Bésikáona. They say of the country here:

"Bésikáona is situated at the entrance of an extensive and remarkably level tract of country, extending 30 or 40 miles south, and twice that distance east and west. This plain is somewhat higher than the plain of Tsi-énim-paríhy, in which is situated Ambohimandroso. It is crossed and re-crossed by a river, the Mènaràhaka, which rises to the east of the ridge east of Besikàona, and after traversing nearly the whole length of a valley in a western direction, turns south; then east to a point as far as its own sources." Mr. Shaw was told that the stream doubled on itself a second time: but Grandidier reports that near the foot of Ivohibe it cuts through the granite ridge, and becomes identified with the Mánanára. The point needs further inquiry. Going further west, through Ivily and Kivory, with their numerous cattle, Messrs. Shaw and Riordan came into the valley of the Central Ibára, with Ihósy as its chief town. They describe it thus:—

"Ihósy, a town of 220 houses, stands in the centre of an extensive valley, through which, from south to north, runs the River Ihósy, in its course to the Tsimandáo. This plain is enclosed with high hills, especially those on the west, where we noted two or three of considerable height. In several places the river spreads out into large lakes or marshes, partially covered with rushes and reeds, and forming the homes of large flocks of wild ducks and other wild fowl. As far as the eye can reach (a journey of a day and a half) north and south is an inhabited country containing about sixteen villages (towns they are called here), with from twelve to fifty houses. A king lives in one, Ipápaména, to the south; and one at Ibetániména, to the north. Beyond this district to the south is a desert, uninhabited, between three and four days' journey in length. On the north is the same, for between one and two days' journey; and on the west over three days' journey; while on the east, though not strictly a wilderness, there are but very few inhabitants.

"We saw over thirty patients in the morning, some of whom were Ibara. In the afternoon two or three of the Ibara kings had arrived, and hearing that some foreigners were in the town, they came to visit us, bringing a large present of food. We took the opportunity of speaking to them about the ignorance in which they were living, and referred them to the condition of their neighbours, the Betsileo, as compared with them. They took our lecture in good part, agreed to what we said, and expressed their willingness to do what they could to bring about a better state of things. These 'kings' came from villages north and south of Ihosy, where the major part of the population under the governor lies. But as the largest town contains only fifty houses; and as we found on inquiry that four to a house was a high average, the total number of inhabitants in the district cannot be more than 2000." They also saw the king of Isály, that part of the Ibara country, which lies west of the three days' desert. The exact position of Isály it is impossible to decide from the native description. We only know that on the sea its people use the port of Sáláry, near the mouth of the Oniláhy. Returning to the eastward, in the neighbourhood of Akáraména, they passed one of those peculiar rocks, in which the graves of the kings have been hewn, at a great distance from the ground; the coffins are placed in the back part of the crevice, with the skulls of bullocks in the fore part. The rock is called Tráno-ménan-d' Rainigoriválo, and has a great number of these crevice-tombs in its face. In regard to one special custom among these rude tribes, they speak as follows:—

"The style of hair-dressing differs considerably from that of any other tribe I have seen. Once a month, and in some cases once in six weeks, the hair is washed, and then rolled up into a great number of knobs, always round, and varying in size from that of a marble to that of an orange; these last are sometimes made flat. After being carefully rolled up and tied or sewn, as the case may be, it is thickly coated with bees-wax melted with fat, so that when cold each knob is firmly cemented to those adjacent to it, and all appearance of hair is gone. When freshly done it looks like lumps of gray clay stuck on their heads, and each of them when struck gives back a sound like striking a piece of hard wood."

With a view to visit the Southern Ibára, our two travellers returned to the granite ridge of Andringitra, and near the north end of this ridge they seem to have found an extinct crater; in its hollow basin were four large and deep holes 14 feet across, with the bottom undistinguishable. Passing south, they came into the valley of the Ménaráhaka, which Mr. Shaw notices as a transverse valley, running across the island. From this point he went on to Ivohibe.

Ivohibe is one of the wonders of Southern Madagascar, and is well known to its scattered people. It is an enormous, isolated mountain, with a level top, standing in the centre of a broad plain, beyond and apparently below the Ménaráhaka Valley, and forming the next terrace toward the south. "In appearance and character it is like the fortress-rock of Ikongo, but its ascent is not so difficult. Like Ikongo, it has a lake of spring water on its summit, which overflows and forms a considerable cascade on the northern side. This saved the native ruler and his people from defeat when they were besieged by the Hovas.

"In this plain I found the best population I have seen in the Ibara. The town I slept in, Ivòhimàrina, has fifty houses and a fair population. The town is the market for the Hovas, beyond which they are not allowed to pass without special permission of the king of Iantsàntsana, the tribe inhabiting this part of the country. There are six or eight other villages within half a day's journey, mostly on the banks of the river (the Mènaràhaka). The Ibara country extends nearly three days' journey farther south, but there is only a sparse population; it is called a desert, having villages along the route at distances of about half a day's journey apart. The general appearance of the south country is flat, with a few isolated hills here and there; but the general level is about the same as that of the Betsileo.

"There was quite an excitement in the town when I arrived. Guns were fired, and the people came rushing out *en masse* to see the Englishman. Most of them had never been out of their own province, nor seen a white man. They stopped me at the gate to ask the usual questions about the health of Her Majesty, and they said that the town was mine, I could go and choose what house I liked, and take whatever I wanted. They found me a good house, and brought me and my bearers a plentiful supply of provisions, in the shape of an ox, a pig, fowls, rice, and manioc, together with firewood. Next morning the chiefs had assembled, and we informed them of the object of our coming."

Both among the Southern and Central Ibára the way was prepared for the establishment of schools and for free intercourse with other parts of the country.

3. SOUTH-EAST MADAGASCAR.

In June and July last, a visit was paid to South-East Madagascar by Messrs. Sibree and Street, who passed through the forest at a new point, and travelled over a great deal of new ground. Throughout the journey Mr. Sibree took careful observations, from which he has constructed a map of the route, and of the country along which he passed. This map has been embodied in the general map of Madagascar. From a voluminous journal, I can only extract a few passages describing the geography of the country, its general appearance, and the manners of its people.

Messrs. Sibree and Street commenced the new portion of their journey at the south-east corner of the Betsileo Province, from the hill-town of Imáhazóny. In three hours they entered the forest, and travelled through it the entire day. They say:—

"Notwithstanding the danger of looking about, it was impossible to avoid admiring the luxuriance of the vegetation. Many of the trees were enormously high, and so buttressed round their trunks that they were of great girth at the ground. The tree-ferns seemed especially large, with an unusual number of fronds; and the creeper bamboo festooned the large trees with its delicate pinnate leaves. It soon became evident that we were descending, and that pretty rapidly. For a considerable distance we had a stream on our left hand which roared and foamed over a succession of rapids going to the south-east; and every now and then we caught glimpses of the opening in the wood made by the stream, presenting lovely bits of forest scenery in tropical luxuriance.

"At half-past four we emerged from the forest, and came down by a steep slippery path through bush and jungle. And now there opened before us one of the grandest scenes that can be imagined. The principal valley, down which we had come, opened into a great hollow or bay, three or four miles across, and more than twice as long, running into the higher level of the country from which we had descended. The hills, or rather edges of the upper level, rise steeply all round this great bay, covered with wood to their summits, which are from

2000 to 3000 feet above the valley. Between these bold headlands we could count four or five waterfalls, two of them falling in a long ribbon of foam several hundred feet down perpendicular faces of rock. Between the opening points of this valley could be seen a comparatively level undulating country with patches of wood, and the windings of the river Mátitánana. On a green hill on the north side of the valley stood a group of houses, which we were glad to hear was Ivòhitrósa. This hill we found was 700 feet above the stream at its foot. The Tánála seem a very simple-hearted, kindly set of folks, and are most friendly. Our visitors were greatly interested in our watches, compasses, knives, pencils, &c., and quite entered into our wishes to get to know their words for various things. At this part of the island the high interior plateau seems to descend by one great step to the coast plains, rather than by two, as it does further north. The stream at the foot of this hill is only 500 or 600 feet above the sea; for we came down 2500 feet yesterday: and the two lines of forest which are crossed further north when going to the east have here united into one."

"*Saturday, June 17th.*—This morning we went down the hill on which the village is situated, crossed the stream, and ascended for some distance on the other side of the valley, in order to get a good view of the different gorges and their waterfalls. Mounting a spur of the main hills we had a good view of the chief fall up a deep valley to the south, and so opening into the main valley as not to be visible from Ivóhitrósa. This is certainly a magnificent fall of water. The valley is about a mile wide by two or three long; it ends in a semicircular wall of rock crowned by forest, and over this pours at one leap the River Mátitánana. Knowing the heights of some of the neighbouring hills we judged that the fall could not be less than from 500 to 600 feet in depth. There is a large body of water, and from the foot rises a continual cloud of spray on either side, like smoke, with a roar which reverberates up the rocky sides of the valley. We were some three or four miles distant, but even from there it was a grand sight.

"The Betsileo dialect is altogether broader than the Hova, and the consonantal changes are numerous. The final *tra* they change into *tsa;* the *n* after the accented syllables has a nasal sound like *ng;* the *z* in pronouns and adverbs of place is omitted; *e.g.*, izy is *i;* iza, *ia;* aiza, *aia,* &c.; the final *na* is cut off; *e.g.*, *làla, olo, ovia,* &c.; and *v* frequently becomes *b.* It seems probable that these shorter forms are the original forms of the words, and that the Hovas, from their liking for strong consonants, have added the terminal *na* and the middle *z* to strengthen the sound, in the same way as they now add a terminal *na*, *ka*, or *tra* to words derived from foreign sources. Besides this, there are a large number of completely different words; *e.g.*, all the household utensils, as the rice-mortar, pestle, winnowing-fan, water-pot, drinking-vessel, spoon, &c., are called by different names to those used by the Hovas; and Mr. Shaw, of the Betsileo Mission, has made a collection of many hundred words peculiar to the southern próvince.

"The Tánála dialect seems to differ from the Betsileo in not changing the final *tra* into *tsa;* but to agree with it in dropping the final *na*, in the nasal sound of the *n*, in the elision of the *z* in pronouns and adverbs, and in changing *v* into *b*. We have obtained a number of words peculiar to the Tánála, and this morning ascertained many particulars as to their customs. Their names for the months are all different from those used in Imerina, and are as follows:—

1. Volasira.
2. Faosa.
3. Maka.
4. Hiahia.
5. Sakasay.
6. Sakave.
7. Volambita.
8. Saramantsy.
9. Sacramanitra.
10. Vatravatra.
11. Zonjo.
12. Hasia.

They have no names for the week-days, and indeed no division of time by sevens; but the days through the lunar months are known by twelve names, some applied to two days, and others to three days consecutively. It is curious that these names are nearly identical with the Hova names for the months; three of them are unlucky times, and children born on these days, *eight out of every month*, are killed by being held with their faces immersed in water in the *saháfa* or winnowing-fan. So that, on an average, more than a quarter of the children born are destroyed!

"Many of these Tánála carry shields, which are made of a circular piece of tough wood, about 18 inches diameter, and covered with undressed bullock's hide. They have a handle cut out of the solid wood at the back. The women in this Mátitánana valley carry a broad knife or chopper stuck in their girdles, resembling in shape a butcher's cleaver, but with a short round handle. This is used for cutting up manioc and other roots, and is called in some parts *ìsitra*, and in others *ànakàntsy*."

As they proceeded towards the coast, along the valley of the Matitánana, they passed from the districts held by the Tánála, into those of the Taimóro tribes.

"The country all about here is delightful; there is a great deal of wood, but much open space; the hills are low and rounded in form; while behind us to the east is the lofty, deep blue, irregular outline of the higher plateau, with some prominent points towering above the rest. Among these, to the northward, a long hill was pointed out to us as the unconquered Ikongo.

"The direct distance from Ivohitrosa to the coast, as the crow flies, is not more than 45 miles. There is but one great step downwards from the upper interior plateau, and not two, as is the case further north. From 3000 feet high above the sea, a descent is rapidly made to between 600 and 700 feet; and then there is a long extent of undulating country, with low hills and patches of wood extending for 30 to 40 miles to the sea. The hills gradually decrease in height and the forest becomes thinner, until for the last few miles there is an almost bare and dead level."

At the Hova Fort of Ambóhipéno they stayed a few days, and Mr. Sibree took the opportunity to get bearings of the neighbouring villages. "In the far distance to the west rose the long and lofty line of the interior plateau; but at no great distance from where we descended from it, it sinks abruptly to the plain; confirming Grandidier's statement that at about the latitude of 23° s. the elevated interior country ceases, and that from thence to the sea southward are low alluvial plains. There is, however, one break; at a few miles' distance from the termination of the plateau there is a lofty detached mountain, Ivòhibé, which must be a magnificent object when seen from only a few miles' distance, as it is nearly as high as the elevated table-land. From thence there are only a few unimportant hills to break the level line which stretches out of sight far to the southward. On my way to and from the observing ground we passed great numbers and many varieties of butterflies in a few minutes' ride through the narrow lanes. Judging from this specimen, an entomologist would find a rich harvest in the Taimóro country."

"In the evening, when talking with the people, we were surprised to find that we were in one of the villages where the Arab influence is said to have been very strong in former times. The people here at Ivátomásina are called Zafin' Ibrahima (descendants of Abraham); and they say they are 'Jiosy mihitsy' (altogether Jews), and have many customs derived from the Jews. But what these were we could not ascertain; and there is certainly nothing in the appearance of the people, either in colour or features, to distinguish them from the majority of Malagasy. There is no doubt, however, that the Arabs have at some former time had a settlement here and on some other parts of this south-east coast, and to some small extent taught the use of Arabic letters. This probably gave rise to the statement in some old works on Madagascar that Malagasy was a dialect of Arabic. An intelligent young man, who came with the chief from Ivàto, gave me a paper with all the Arabic characters and many of the syllabic sounds, with their equivalents in Malagasy. He also shewed us a paper written by M. Grandidier, in 1870, and given to him as a certificate that the bearer had copied for him various extracts from native Arabic books of prayers, genealogies, and sorcery; and that he (M. Grandidier) was well satisfied with his zeal and accuracy. We enquired about these books, but there seemed a good deal of unwillingness to let us know anything about them, or see them. The books of sorcery they said were burnt at the time of the burning of the idols in 1869."

From Ambóhipéno the party journed south, with the view of visiting the Hova forts of Máhamánina, Ankárana and Vangaindráno. "After passing (they say) through a narrow belt of wood, we came up to a ridge rising nearly 500 feet above the sea-level, a considerable height for this flat region. From this there was an extensive view; and on a prominent hill nearly due west was a conspicuous point, which the glass showed plainly to be a lofty steep-roofed *lapa*, with a good number of houses clustered round it. This was the Hova fort of Máhamánina, then about 12 or 14 miles distant. The town is wrongly placed on Grandidier's sketch-map of Madagascar; he shows it as about 40 miles nearly due south of Ambohipéno, whereas it is really about 25 miles south-west by west. But as we heard he did not go further south than Ambohipéno on this part of the coast, his information was probably derived from the natives, and was consequently vague and unreliable.

"The quiet obedience rendered by the people to the Hova authority seems to render any large amount of force unnecessary. Notwithstanding this, however, there is a greater display of Hova power here than at any place we have been to yet, not even excepting Fianárantsóa. The gates are all guarded, and the drum beats at regular times every morning and night. Like most of the Hova colonies and military posts all over Madagascar, the four forts in this south-eastern part of the island, Ambohipéno, Máhamánina, Ankárana, and Vangaindráno, were built at the close of the first Radáma's reign, or in the early part of the first Rànavàlona's, soon after those merciless wars by which so large a portion of Madagascar was brought under the authority of the sovereigns of Imerina. The Hova rule now seems generally to be mild, and in some cases, where the governors are upright men, there appears to be no great amount of oppression of the conquered tribes. But these latter have by no means forgotten the cruelties practised by Radáma's and Ranavàlona's generals. Over large districts, all the male population whose heads were above the armpits of the soldiers were ruthlessly shot down or speared, and the women and children taken as slaves, so that a large proportion of the slave population of Imerina are descended from the Taimóro, Taisáka, and other tribes on this south-east coast."

At Mahamánina they say:—"From our house we have a pleasant and extensive prospect over a large extent of comparatively level country. We are now on the same parallel of latitude as Ivóhibé, the very lofty detached mountain to the south of the interior plateau. South of this, a very low line of somewhat higher land or hills than the general level of the Taimóro country seems to run for a considerable way to the south. To the south-west, at perhaps 20 miles distant, is a ridge of no great elevation, stretching north and south for a few miles; but beyond this nothing appears to break the low level line of the plain. The country to the west of Máhamánina is nearly bare of wood, but the main line of forest seems to run along the low country southward in the same general line that it follows on the edge of the upper plateau. Tribes of Tánála inhabit this forest region and its borders, as they do for 200 miles to the north of this, and there seems a considerable population of Taimoro to the west of this place; I noted the bearings of at least twenty villages west of Máhamánina. The great mountain of Ivóhibé is about five days' journey from here, and around it are two tribes of Tánála called Taivònona and Taisònja; of these a chief called Raibáhy, of a family named Zàfimanèlo, is king. The Hovas give a bad account of these Tánála, but the Taimoro told us there would be no difficulty in going amongst them. The tribe inhabiting this neighbourhood is called Zàfisòro.

"We ascertained that it was only a week's journey from Vangaindrano to Fort Dauphin; that there were villages and a large population all along the route; and that the Taisàka and Tanòsy tribes were friendly and acknowledged the Hova authority. Some, if not all of the people here, are a Sàkalàva colony from the west of the island, and are called Màsotáfika. For *eny* they say *eiky;* for *ity, itòky;* for *iry, iròky,* &c.

Having reached Vangaindráno, they observe:—"We were surprised at the large number of villages to be seen in every direction in this neighbourhood; they stand in groups of from two to half-a-dozen in a line and close together. It would be an interesting excursion to take a canoe and ascend the stream as far as it is navigable, which is for several days' journey, and so get into the interior of the southern portion of Madagascar, a district as yet perfectly unknown to Europeans, and probably to the Hovas as well. Except the Mangóro, the Mánanára is the largest river on the east coast, and rises far in the interior beyond the line of forest.* From all accounts there is a large population as one goes further west. Both to the south and north of Vangaindráno the people seem to be divided into tribes who live on the banks of the different rivers, and who in many cases are called after the names of these rivers; while there is a tract of uninhabited land halfway between each considerable stream."

Throughout their journey, and on their return, they speak repeatedly of the kindness and hospitality with which they were welcomed by their native friends. At Ankárana, Mr. Sibree says, "The dinner was I think the longest, and certainly was the noisiest entertainment at which I have ever assisted. About a score of the officers were at the table, and seven of the ladies. After a long grace from the pastor, dinner was brought in, and consisted of the following courses: 1st, curry; 2nd, goose; 3rd, roast pork; 4th, pigeons and water-fowl; 5th, fowl cutlets and poached eggs; 6th, beef sausages; 7th, boiled tongue; 8th, sardines; 9th, pigs' trotters; 10, fried bananas; 11th, pancakes; 12th, mangaházo; 13th, dried bananas; and, last, as I thought everything must have been served, came hunches of roast beef. All this was finished up with coffee. By taking a constantly diminishing quantity of each dish I managed to appear to do justice to them all. Claret went about very freely, and at last some much stronger liquor; and the healths of the Queen, 'Our friends the two foreigners,' then those of the Prime Minister, Chief Secretary and Chief Judge, were all drunk twice over, the Governor's coming last; all followed by musical (and drum) honours.

"In descending the hill I noticed that the villages in the neighbourhood of Ankárana were not so numerous as those surrounding the other three Hova forts in this part of the country; and the reason of this seemed plain: Ambohipéno, Máhamánina, and Vangaindráno are situated in the valleys of considerable rivers, while Ankárana has evidently been selected on account of its strong situation, commanding a view of an extensive tract of country. Over a low range of hills to the west two prominent rounded mountains are seen; one of these, Isaonjo, it is said, occupied old Ràiningòry more than nine months in attempting to take it. He did not effect this, but eventually succeeded in setting fire to the town on its summit. On the top and slopes of Ankárana are large masses of volcanic rock.

"We have been interested in finding that many of our bearers have met with their relatives in these coast provinces. Many of their mothers were brought up from these parts as slaves, when children, in Radàma's cruel wars. The most remarkable circumstance was that our cook discovered that one of the Governor's wives at Ankárana was his mother's sister. And at the same place another of our men found that the chief people of the Taisáka village were his mother's brothers.

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* Its upper portion is the *Ménaráhaka.*

"While taking our lunch in one of the houses we noticed the primitive dishes and spoons used by the people. The former consist of a piece of the strong, tough leaf of the pandanus-tree, here called *fàndrana,* and the leaves *fàsy.* This is doubled over at one end so as to retain rice or liquid. The spoons are pieces of the leaf of the traveller's-tree, folded up so as easily to carry food to the mouth. This pandanus has a fruit, yellow in colour, and something in shape and size like a pine-apple without its tuft of leaves. When dry, it is brown in colour, and each hexagonal division, when separated from the rest, is like a tough wooden peg."

At several points, on both the outward and the return journeys, Messrs. Sibree and Street observed masses of trap-rock, scoria, lava streams, and the like; and it is evident that the volcanic eruptions so patent in the north and centre of the island have not been wanting in its southern districts.

"In three small ravines running down to the shore there were old lava streams, some cut through by the action of water, and stretching out into the sea. Passing a village called Lòharàno, we presently came to an extensive lagoon, extending northward for four or five miles, and formed by the River Itampòlo, before it reaches the sea. This appeared to be the first (from the south) of that remarkable series of lagoons bordering the shore, and extending, with but few breaks, as far north as Hivòndrona, near Tamatave, a distance of 260 miles. Along the southern side of this lagoon are masses of lava rock, some of it in enormous blocks."

Journeying along the sea-coast, at length they reached the Mananjára River, nearly a mile wide. "We got canoes and crossed at the bar; and so, after dark, reached Másindràno, on the northern bank of the river, and close to the sea. There is no town called Mananjára, but this Másindráno is the *ladóana* or port; while half a day's journey up the river is Itsìatòsìka, the Hova fort, with a governor. This is the largest town we had seen since leaving Fianarántsóa. It has an air of neatness not very common in this country, and there are numbers of well-built houses standing in spacious court-yards. These belong mostly to French traders, of whom there are no fewer than forty residing here. A little way into the town we were met by the Commandant, with his officers, and the pastor, who gave us a kind welcome, and led us to a good-sized house."

From this point they ascended the river in canoes to Itsiátósika and beyond it; and passing Ambóditranámbo, and climbing the forest-covered walls, by Andákana and the Valley of the Mananjára, they at length reached Ambohimánga, the capital of the Northern Tánála, where they spent two days.

"These Northern Tánála, who acknowledge Ióvana as their chief, number about 6000, and extend from here to about three days' journey northwards. The situation of this town strikes one as exceedingly pleasant. A couple of hundred feet below, to the east and north, flows the River Mánandríana, and the surrounding hills on the further side of this stream are about the same height as the town, and are mostly covered with bamboo. Three or four miles to the west there seems to be a wide valley with bush and dwarf vegetation; but beyond this is a bold, prominent ridge, running nearly north and south, and dark with forest; while beyond, to the south-west, are lofty granite peaks in the far distance, at the edge of the table-land. Ambóhimánga is more than 2000 feet above the sea-level."

From this pleasant resting-place, the journey to the capital was easy. After a long climb from Ambódivóahangy, at the foot of a lofty hill, they reached Ivohitrámbo, 4750 feet above the sea, on the edge of the inner forest and plateau, and commanding a magnificent view on every side. Thence a few hours' run brought them to Isándrandáhy, on the high road between Antanánarívo and Fianárantsoa.

4. JOURNEY TO THE WESTERN SAKALAVAS.

Few parts of Madagascar are so little known as the western districts. All the east side of the island is under Hova dominion, and, being well supplied with rain, is covered with forests. At many ports on the coast French and English traders reside, and there is constant intercourse with the interior. Not so with the west. Here report has long spoken of a broad belt of no-man's-land, with hostile Sakalava tribes on the farther side. This unknown region has now been pierced by English travellers; the veil has been lifted, and we know what the land contains. A few paragraphs will suffice to exhibit the result.

A journey to the west was undertaken by Messrs. Sewell and Pickersgill, in June, 1875, being commenced from Máhatsinjo, four days' distance from Antanánarívo, and on the edge of the volcanic region near Lake Itásy. They say:

"We had travelled but a few hours west of Máhatsinjo before

we lost all trace of human habitations, except here and there a few huts close to large cattle-folds, and a little further still, two military stations not far from each other. About a day's journey from Mahatsinjo we crossed the River Sakáy, which is about 100 yards broad, and though shallow when we crossed it, must contain a large body of water in the rainy season. This river may be regarded as the extreme western limit of Imerina; and between it and the Sakaláva lies an extensive tract of waste land, about six days' journey across. The greater part of this waste is covered with long grass, and cannot be much unlike the prairies of North America. Often the long grass on each side of the path grew quite over it, so that nothing of it was seen except the part on which we were treading, and often, too, the grass was quite above our heads when walking. Making way through this grass was very trying to the feet of our bearers, and a good deal delayed their progress.

"About two days' journey from Máhatsinjo we reached Tánimándry, a small military station on the banks of the Imánga. We had stayed to dine at another still smaller station, Tsinjoarívo, two hours before. Both these places, but especially Tsinjoarívo, made us feel very much for the poor people who were condemned to live there. They were immense cattle-pens, with a few houses connected with them; and the whole were surrounded by a thick fence of prickly pear. That at Tsinjoarívo was full twenty yards in width. There were but twelve soldiers there besides the Governor; nobody could read; and there seemed nothing to break the dreadful monotony of their lives. At Tánimándry it was a little better.

"Antsiróamandídy took us by surprise: it is a large town for Madagascar, having from 150 to 200 houses in it. It is thoroughly isolated in the midst of the waste; but it is a stopping place for almost all who travel between Imerina and those parts in the west which are subject to the Hova."

Starting from this point with provisions for four days, they say:

"At noon we reached another military station, Márovátana, as wretched as any we had seen. The houses there were the last we saw till three days afterwards we looked upon the plain in which Ankavándra is situated. In some parts of the extensive waste through which we travelled there are great numbers of wild cattle, and every dry season many of the natives (both Hóva and Sakaláva) are engaged in catching and taming them. On our return journey we met a party of about 200 men thus occupied. They came from the western part of our district, and it was interesting to be recognised by them as one who had preached in a village from which many of them came. On a few occasions we met with these wild cattle, but not often. Two or three times also we met with guinea-fowl, which started before us like partridges. The road all the way from Mahatsinjo had presented few objects of interest. The last morning's travel was somewhat exciting, as we drew near to the western limit of our journey and saw glimpses now and then of the broad plain in which Ankavándra lies. The descent into this plain was very steep. The table-land on which we had been walking for several hours appeared by our aneroids to be on an average about 2500 feet above the level of the sea; but after we had descended the hill and come to the stream at its foot, they pointed to only 400 feet above the sea-level.

"The Mánambólo, that flows past the town, is a really fine river, and as we might suppose from the low level of the plain, there is but one slight impediment to the passage of boats up the river from the sea to Ankavándra. This impediment is about a day's journey to the west of Ankavándra, where the river finds its exit from the plain through the high hills on the western side of it. The proper name of Ankavándra is Miádanarívo, Ankavándra being the name of a river which runs close to it, and from which its supply of water is obtained. The town contains probably as large a Hova population as Antsiróamandídy, with perhaps an equal number of Sakaláva living in its immediate vicinity.

"We set off to Andránonandríana (another military station a short day's journey north of Ankavándra) on Saturday morning. Shortly after leaving the town, we crossed the Mánambólo. It was at least 150 yards across, and there was another 100 yards of sand which is covered in the rainy season. The journey was a delightful one. The road was tolerably level, leading us often through park-like scenery very similar to parts of the road between Tamatave and Andovoranto. The grass, however, had none of the freshness of that in the east of Madagascar. The country here, and I imagine all west of the hilly country of Mándridráno and Vákinankáratra, seems to be quite free from the drizzly rains so common in the east during the winter, and this has a great effect on the character of the vegetation. The little streams coming down from the high land to the east were all skirted with trees, of which a great number were oleanders, and a still greater number were various kinds of acacias. The tamarind-trees, however, attracted my attention more than any others by their rich foliage, their beautiful form, and the grateful shade they furnished. I measured one that covered a circle of about 30 yards in diameter, and there were many whose branches extended over a space of 20 yards in width.

"On Wednesday morning we left Ankavándra and commenced our journey south to Imánandáza. The country during the first day's journey was very similar to that on the road to Andránonandríana, except perhaps that we saw more Sákaláva villages. But the second and third days and the first part of the fourth were more wearisome both to us and our men than any other portion of our journey from first to last. I should suppose that the plain of Ankavándra is about 20 miles across, but there runs along the middle of it a range of very low hills, which seem mostly comprised of sand, with large numbers of quartz and other pebbles rounded by the action of water, and the whole thinly covered with short grass. What had been the previous state of this wide plain, and under what circumstances the water had acted upon these pebbles (we could not see the slightest trace of shells or former animal life) we often tried to imagine, but could come to no conclusions; but the effect of the pebbles on the feet of our men was unmistakable, and two weary days we spent in getting over them. Not that the whole journey was a wilderness. We crossed a large river, the Itondy, which forms a very important branch of the Mánambólo, and this was surrounded by luxuriant vegetation; and at the close of the second day's journey from Ankavándra, just as the sun was setting and whilst still near this river, we were for a while quite at a loss to know how we were to get through the tall prickly reeds, which, with a small but deep stream of water, seemed effectually to stop our progress."

After another weary journey over the stony plain, and continued struggle with the reeds and nettles, they reached Imánandáza. The river they found 150 feet lower than the Mánambólo at Ankavándra; but the town is on a low hill, and on the same level as the latter.

"On Monday we ascended a hill to the south of the town, that we might be able to see the large river which runs to the west about a day's journey to the south. All the rivers from the Sakáy, a long way to the north of Itasy, to the Manía, a large river which flows through the country of the Betsileo, unite in one great river about 30 miles to the south-west of Imánandáza. After the junction of the Sakáy with the Kitsámby there is a very fine waterfall or remarkable rapids, almost due south of Imánandáza. We had a great desire to go and see the falls, but it would have kept us at least three days longer on our journey. The river there is called Tsiáfadréharéha, and these rapids must always present insuperable obstacles to the navigation of the river further into the interior; but from that point to the coast, probably about 80 miles, there seems to be no impediment. All the natives who spoke of this river seemed to think that there was none other like it for width and depth in Madagascar. From the waterfall to its junction with the Manía it is called the Mahajilo, after that it is the Tsiribíhina (the river that cannot be forded). At the mouth of the river is the large town of Tsimánandrafózana, where a French trader, who goes among the natives by the name of Samanta, has established himself. Judging by the reports of the natives, and by his being known in all the country round, he must be carrying on a large trade. Many Arabs also live there, and Mahometans from the islands north of Madagascar. We met one of these, who had come up the river in a canoe as far as he could on the way to Imánandáza, and was going about among the Sakalava selling his goods. He assured us that no slaves were brought to Tsimánandrafózana.

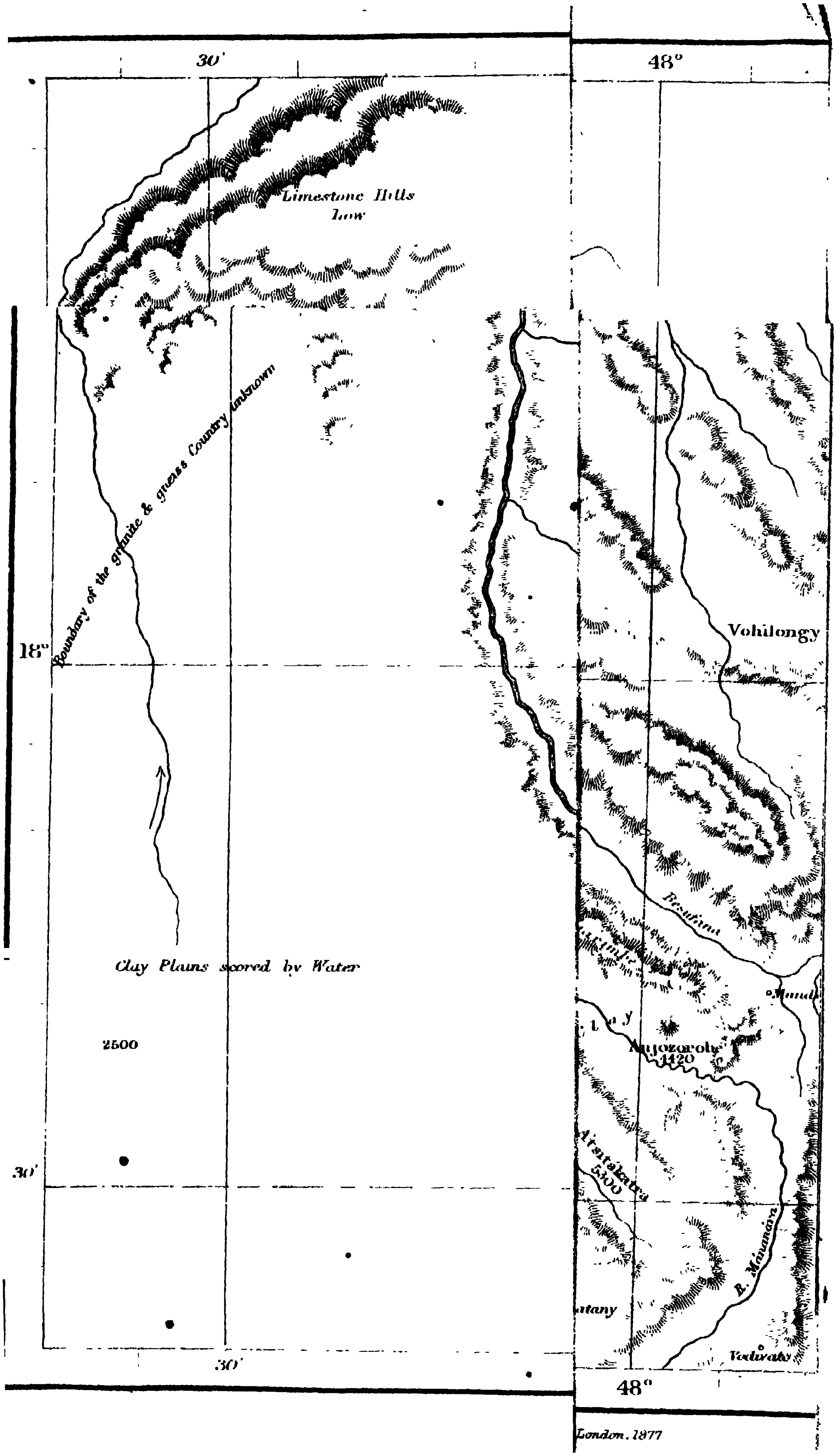
"At Imánandáza Mr. Pickersgill was engaged with the sick. He had been so much disturbed at Ankavándra by those who wanted medicine coming to him at all hours of the day, that whenever any came to him on Sunday or Monday, he sent them away for the time, telling them all to come to him on Tuesday morning. This spread through the town, and a large crowd came to him, who kept him busily at work from a little past eight till three. A wretched idea it gave of the state of many in the town. The poor soldiers were in a most deplorable state; they were badly fed, badly clothed, and had been again and again ill with the fever prevalent during much of the year in these low places."

From this point a long and wearisome journey of four days, through troublesome grass and under a hot sun, brought them again to the Mandridráno, from whence they had set out.

5. THROUGH THE ANATIVOLO TO SIHANAKA WEST.

A fifth journey was undertaken in June last in an entirely different direction by Messrs. Moss and Lord. These gentlemen proceeded to the northward, to a point not hitherto visited by Englishmen, and then, turning east, entered the Sihánaka Province on its west side. They also passed over much new ground, and have added valuable contributions to our previous knowledge of Northern Madagascar.

They first visited the Anátivolo, which was carefully mapped by the Rev. J. Sibree two years ago; and rested at Anósibé, at which town the Governor resides. The people of the district are known as Olo-máinty (black people); they resemble the Sihánaka tribes, and their tradition is that their forefathers were brought hither during his wars by Impóinimérina, some ninety years ago. The Anátivolo marks the first great fall in


30'
48°
Limestone Hills
Low
Boundary of the granite & gneiss Country unknown
18°
Vohilongy
Clay Plains scored by Water
2500
Besatrina
Manali
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1420
Arstakatra
5300
30'
R. Mananara
atany
Vodivato
30'
48°
London, 1877

the ground on the north side of the central plateau. "The high ground which forms its southern boundary is in fact the northern termination of the great Imerina plateau, which, farther north-east, ends at Ambàravàram-bàto, and east at Angàvo. The Anátivolo plain, shut in east, west, and south by lofty hills, extends northward, with alternations of low and rising ground, at a mean elevation of from 3000 to 2300 feet above the sea, as far as Ambòdiamòntana, five days' journey away. Along the whole extent of this large district, the soil is of sandy alluvium and red porous clay, easily disintegrated by the action of wind and rain. In many places on our journey we saw whole hill-sides that had been eaten and washed away by the tropical torrents, forming precipices of sometimes 1000 feet in depth, and chasms in whose shelter luxuriant forest-trees find a congenial habitat, and in which frequently large herds of cattle are fenced off and protected from the winter-cold. The tending of cattle on a somewhat larger scale, and the cultivation of rice, sugar-cane and mángaházo (manioc), on a somewhat small scale, form the chief occupations of the people."

Passing over the rough clay hills to Andrâopásika, crossing the Mánanára River, close to a conspicuous wooded hill called Vohiléna; and resting at the stations of Andránomiántra and Tsáraháfatra, which Grandidier has placed on his map, they encamped at the foot of one of the great hills of the northern districts, the hill of Vóambóhitra. Mr. Moss says: "Its magnificent, black, basaltic mass had been visible for several days, and now towered grandly some 2000 feet above the plain. Arrived at its foot, we had a good view of this noble mountain. Its northern front appeared to extend about four miles, presenting a bluff precipitous face of black basaltic rock. It rises about 2000 feet from the valley, and its summit can scarcely be less than 4500 feet above the sea. Its general appearance resembles Table Mountain at the Cape of Good Hope. For three days at least, on our further northern journey, it was still the most conspicuous landmark, and we afterwards kept it in view for several days longer on our eastward course to Ampàrafàravòla and Ambàtondrazàka."

At Móraféno, a few miles beyond Vóambóhitra, they encamped on the banks of the Bétsibóka, here become a considerable river. Passing Ambódíamóntana, one of Grandidier's stations, they ascended an isolated moor, some 4500 feet above the sea, and the next day reached the important Hova fort and garrison of Antóngodrahója.

"Antóngodrahója is 'beautiful for situation.' It stands on the very verge of the high table-land over which we had been travelling for the last two days. About 4150 feet above the sea, it commands a most magnificent view of the broad valley of the Ikiòpa, the Bètsibòka, the Amparìhibi, and the Màhajàmba on the north, as far as Trabònjy. From Antòngodrahòja the ground descends by a precipitous path some 2000 or more feet to the plain below; after which a good road leads by easy stages, three days' journey to Trabònjy, and thence to Mòjangà." Close to it, on the east, is the peak of Námakia, under which the pass into the plain runs. From its position on the old high road to Mojangá, and at the edge of the central plateau, it is a place of considerable importance. Its people are unusually intelligent, and far more advanced than the occupants of other towns on the route. And the rustling of silk dresses, and the display of French hats in the little settlement church, were associated with a fair knowledge of the latest hymns, and a most hospitable and kindly welcome to the friends who had come to instruct them."

In passing from Antóngodrahója to the Siһánaka country, the travellers retraced their steps to Tánifótsy, and then went eastward. And it is a fact to be noted, that on the road they kept ascending and then descending, crossing hollows and ridges alternately, showing that they were on the northern edge of the plateau, and that the sandy clay had been washed out from between the rocky ridges on which it rests. The population on the route they found to be Sihánaka, proving that this empty district had received its small supply, not from the centre of the island, but from the coast. Their ignorance was lamentable in the extreme. In the village of Antsámpandráno, the little population of 200 people, including several soldiers, were terrified at the sight of two live Englishmen, and at once ran away.

At Ampárafáravóla they rested with the fine old Governor, an excellent man in every way, and then prepared to cross the Alàotra Lake. After narrow paths, swamp, and bog, they at length found three small canoes to carry them across the water. "Choosing the least leaky of the three for ourselves, Mr. Lord and I, and the rowers, launched forth into the dim unknown. But, alas! the craft proved unseaworthy. An unfortunate rower became oppressed with a sense of his vast responsibility, and lost his wits. And there was no Mr. Plimsoll at hand to protest against overloading." Having found a large canoe at Máhakáry, in it they completed their perilous voyage: now along rapid narrow gulleys, overarched by the interminable zozòro; then into a wide, open expanse of black, stagnant, weird-looking water, abounding with crocodiles and wild fowl; then up one or two rivers, whose strong currents, flowing into the

Alàotra, more than once nearly capsized our keelless vessel; then into the narrow gulleys again, with the rushes overhead so dense as to resemble a dark tunnel; and so on, until two hours after dark; now and then hopelessly aground, our boatman not daring to put his foot even outside for fear of the crocodiles! At last, however, between 8 and 9 P.M., we landed at Antànibào, only to experience during the night adventures as unique as had befallen us during the day.

"A strange, uncanny sort of a place is this Antànibào. The people are utterly heathen, and many of them had never set eyes on a white man before. Yet (as Paul and his companions once found after a more eventful and disastrous voyage than ours) 'the barbarians showed us no little kindness.' We had brought nothing with us but our beds and a few candles, all our food and nearly all our men being on the other side of the lake. So the people of the house kindly gave us food, and lent us their black greasy pots to cook it in. And then, how they questioned me about my Price's Patent Candle! '*What was it?*' '*Would it burn for ever?*' '*Did it never become shorter?*' and so on. But as we prepared to lie down on our stretchers, ominous hints fell from the master and mistress of the house about *vòalàvo* or rats. We, in our turn, began to ask questions; and were told that the rats came up from the lake by hundreds, and overran and devoured everything that came in their way. Then our host and hostess mounted a bedstead consisting of a mat or two resting upon cross-pieces of wood, supported by poles raised 5 or 6 feet above the ground. Over this, and suspended from the rafters of the roof, was a rough looking *bag*, into which our host and his wife crept, and then they were secure for the night. Not so we; for I had not slept above an hour, when a flap against my face, and a succession of most unearthly noises, startled me, and I awoke to find the room dark, the candle out, rats racing over me, and the house all in a commotion. Invisible creatures with wings were flapping and flying about in all directions. What could it be? Another bang against my face, and the rats venturing into still closer proximity, roused me to strike a match and light the candle again. Away go the rats by scores; up the walls, along the floors, into corners and out of the holes in the roof. But the real disturbers of the peace turned out to be a flock of young goslings, who had remained quietly roosting in a corner of the room until the prolonged glare of my Price's Patent had beguiled them into imagining it was morning, and then discovering after all that the luminary was but an intruder, they one and all with whiz! flap! and flutter! went bolt through it, and most effectually put it out. I amused myself through the night watching them, and relighting the candle as often as it was put out—occasionally watching the rats chasing one another over my companion's couch; or three or four goslings, more philosophical than the rest, who stood close to his nose quietly speculating on the music that came from thence; and then the rats running up and down the bag in which our host and hostess were taking their rest. I never spent such a night before, even in Madagascar, and I could not help reflecting that just such as this is the daily life of these poor people; they know none better, and are even contented with it. In the wet season, I was told, the crocodiles even find their way into the very houses, and steal the fowls, and the people are too lazy and indifferent to make the door secure."

Other journeys have been undertaken within the province of Imérina by Mr. W. Johnson; and a large amount of new detail has been gathered by him for rendering the map of the province more exact. Mr. Johnson has visited and examined the great hill of Ambohimiangára; the north and west sides of Lake Itasy; and the Valleys of Ankáratra. He also succeeded in ascending four of the principal peaks of Ankáratra, the highest of which he judged to be 8763 feet above the sea. The extreme care with which Mr. Johnson observed, imparts to his suggestions and corrections a special value.

CONCLUSIONS.

The conclusions to which the facts gathered on these several journeys point may be thus briefly summed up:—

1. Since much new ground has been visited, considerable additions have been made to our knowledge of the geography of Madagascar. At several points the area of exact knowledge has been extended with correctness and care. Where vast chains of hills once met the eye, or a broad barren desert stretched out before us, and we could only long for new opportunities of finding what lay beyond,—now the ridges have been crossed, and the country behind explored; the desert has been passed, and the low country beyond has been duly surveyed. In this way the Ibára country, the Sakaláva districts on the west, and the Hova territory on the south-east, have been described. The forest has been crossed; important points, like Ivóhibé, the valleys of the Matitánana, Mananjara, and Mánanára, the course of the Mania, Vohambóhitra, and the Anátivólo, have been successfully determined. A new edition of the Madagascar Map has become necessary.

2. We know with greater exactness the boundary-line of the

great upheaval, which has given us a raised plateau in the centre of the island with a basis of primitive rock, and a coast platform surrounding it on almost all sides. The gneiss ridge of Bóngo Lava, which marks very decidedly the western edge of the plateau, is more clearly known. The point where the two granite walls, which uphold the terraces on the east side of the island coalesce and become one, is better defined. The northern lip of the same formation, with its high moor, has also been again visited.

3. The broad terrace of red sandy clay which surrounds the granite centre on all sides, and forms an outer terrace, about 800 feet lower than the central plateau, has been more fully examined, and its unfertile character been better understood. Here, too, as on the upper plateau, the effects of denudation, especially by the ordinary agents of rain, storms, streams, floods, and waterspouts, may be seen on an enormous scale. It is to be noticed also that, as the granite walls on the east are lofty and little broken, except along the terrace of Ankáy, this denudation has been thrown to the west and north, where the Betsibóka and Ikópa rivers (on the north and north-west), and the Mania, Tsiribihina, and Mánjóky (on the west), gather into themselves streams of water, which rise even on the very edge of the eastern granite itself. One thing of interest remains to be examined. No traveller has yet visited those localities in which these important rivers leap over the outer edge of the granite core of the island on to the lowest terrace, which extends to the sea-shore.

4. The volcanic eruptions which were known to have been wide spread, are now seen to have spread more widely still; and their results are traceable on the south-east coast, in the Ibára country and in Voambóhitra. Few countries in the world, of so limited an area as Madagascar, bear witness to volcanic action so enormous as this.

No addition has recently been made to our knowledge of the secondary formations in the district around the coast.

5. During the past two years the members of the Mission have paid great attention to the Malagasy language, and have commenced the compilation of a new and more complete Dictionary. A careful examination of Drury's Vocabulary has shown clearly the substantial oneness of the language spoken throughout the island. More than sixty per cent. of the words used by Drury's Sákaláves are virtually the same as the Hova words of the same meaning in use at the present time. The strength of the Malay element in the language is indisputable. Then, again, the African element has not been fully examined, but is becoming more clear. The Rev. W. E. Cousins says: "I

have been examining Bishop Steere's Kiswahíli Vocabulary, and have made a list of about fifty words, among them the words for bullock, goat, ass, dog, crocodile (mámba), fowl, basin, box, ship, scales, onions, dates, tobacco (tambáko, a word used on the coast), gum copal, dollar, half-dollar, &c., fable, kabáry, paper. Some of these words are of Arabic origin; and almost all the words I found were of the class that would naturally be carried by traders visiting the western coast. It seems certain that there has long been commercial intercourse between Madagascar and Zanzibar. There is a quarter in Zanzibar called Madagascar-town, though at present there seem to be but few Malagasy in the place. Dr. Steere told me that the Malagasy were named by the Zanzibar people 'Mákalálao,' or Cockroaches, probably because they brought the Malagasy cockroach with them. All these, and kindred matters, are certainly deserving of more attention than we have yet given them." *

6. In all the districts examined, the estimate previously formed of the population has had to be seriously reduced. Whether among the Tánála, the Ibara, or the Sakalávas, the population has been found to be very thin; vast areas of territory are seen to be almost empty. But another thing has also been witnessed. There is in all directions an earnest desire for improvement. Wherever the English teacher goes, his visit is welcomed; his words of counsel infuse new life; his books are purchased; his assistant-teachers are asked for. Little progress has been made in regard to roads, and the conveniences of civilisation are not eagerly sought after. Time is wanted for right ideas to blossom and bring forth fruit. But the vision of the future is bright; its interpretation is sure.

IV.—*On the Distribution of Salt in the Ocean, as indicated by the Specific Gravity of its Waters.* By J. Y. Buchanan, Chemist and Physicist in the *Challenger* Expedition.

[*Read*, March 12th, 1877.]

During the cruise of the *Challenger* I made a continuous and extensive series of observations on the specific gravity of the sea-water, with instruments constructed under my own directions, and calibrated by myself. The instrument used for all the determinations was a glass hydrometer, weighing 160·0405 grammes, with stem divided into 100 millimetres, and of such

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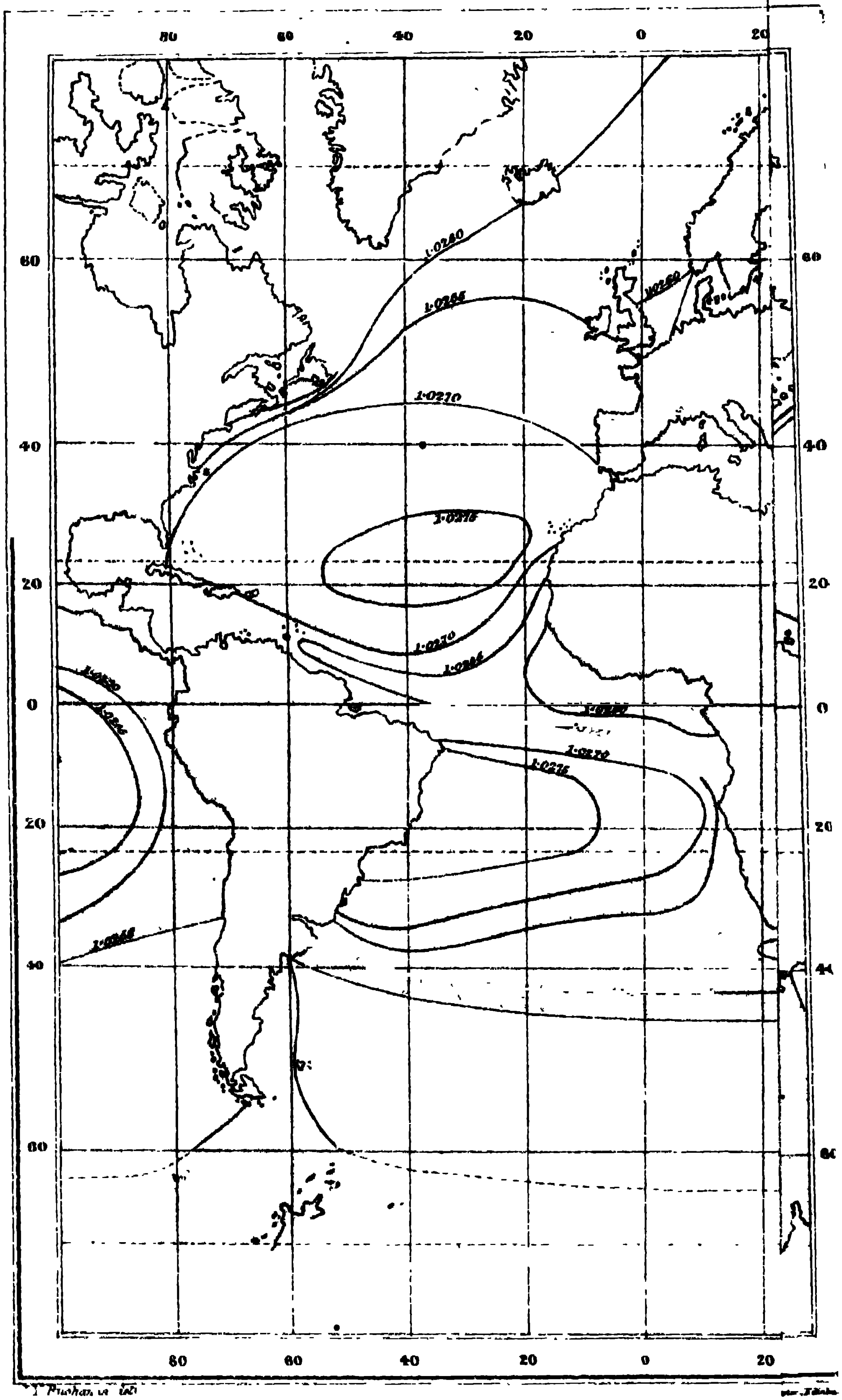
* See p. 6 and last.

CHART S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of the Red Sea, where evaporation takes place with such energy that its waters are the saltest that occur in any sea in free communication with the ocean.

The vertical distribution of saltness is shown in diagrams of sections; one being along a meridian in the Atlantic, and another along a meridian in the Central Pacific.

The Atlantic section (*vide* Diagram) shows the distribution of saltness along a central meridian (25° to 30° W. long.) from 32° N. to 32° S. latitudes by means of *equi-saline* lines, the vertical area included being that between the surface and 2000 fathoms, or the bottom where it occurred at a less depth than 2000 fathoms. Above this section is a diagram representing the distribution of surface-saltness along the same meridian. Both of them show in a very marked way the effect of climate on the saltness of the sea, not only at the surface where its effect is directly felt, but even down to the bottom, at two or three thousand fathoms. If we consider the vertical section, we see the line of 1·0270 leaving the surface in 8° S. lat., reaching a maximum depth of 75 fathoms in lat. 12° S., then rising very gently till it crops out in lat. 29° S. In the North Atlantic it leaves the surface in 14° lat., reaches a maximum depth of 200 fathoms in 25° lat., then gently rises and crops out probably about 40° lat. The area of equatorial dilution may be said to extend from about 5° S. to 8° N. lat., but the specific gravity, especially of the surface-water, varies greatly, owing to the violence of the currents, as well as to the annual oscillation of the equatorial rain-belt. The equi-saline line of 1·0265 is found in lat. 32° S. at a depth of 75 fathoms, and sinks to a depth of 160 fathoms in lat. 17° S. It varies but little in depth until the equator is crossed, when it recurves in latitude 3° N. at a depth of 70 fathoms, and crops out at the equator. It leaves the surface in 7° N., and descends steadily till in lat. 32° N. it has reached a depth of 450 fathoms; further north it no doubt recurves downwards, for here we find it sloping downwards from 1500 fathoms in 32° N. to 2000 fathoms. The equi-saline line of 1·0260 starts from a depth of 250 fathoms in lat. 32° S., remains almost perfectly horizontal with a slight upward tendency as far north as lat. 5° S., when it turns downwards, recurving about lat. 24° N., and reaching the bottom, 1500 fathoms, in 16° S. lat. It does not reach the surface at all in our diagram, the nearest approach to it being a trough of water under 1·0261 between 1° and 3° N. lat. I have little doubt that if our observations had enabled us to carry our diagram further north, the 1·0265 line would have been seen to have a similar form. Every one must necessarily be struck by the similarity between the dips of the equi-saline and the isothermal lines, which descend in the

Atlantic from south to north (without, however, recurving in the case of the isothermals).

If we consider only the water in the first 200 to 300 fathoms from the surface, we observe a very marked general law in the distribution of saltness. In the regions where the surface is undergoing decided and continuous concentration, as everywhere where it is above 1·0270, the specific gravity of the water decreases as the depth increases; while in the equatorial regions, where the water suffers marked and continuous dilution, the specific gravity first increases with the depth, the maximum being usually met with between 50 and 100 fathoms, after which it follows the same law as the water further south or north.

The Pacific section (*vide* Diagram) shows the vertical distribution of saltness between 38° N. and 40° S. lats. along an approximately meridional line, passing through the Society and the Sandwich Islands. Around the Society Islands we have the saltest water of the Pacific; it is here only that the specific gravity goes above 1·0270, and nowhere does it reach 1·0275. The great bulk of the water is under 1·0260: indeed, in the North Pacific, the quantity of water with a specific gravity above this is so small that it would have very little effect in the determination of the mean specific gravity of the water. In the South Pacific the equi-saline line of 1·0260 leaves the surface in lat. 34° S., and descends with considerable but decreasing rapidity until, in lat. 28° S., it attains a depth of 225 fathoms, and it preserves a depth of about 200 fathoms as far as lat. 4° S., where it descends, forming a tongue extending as far as 6° N. lat. between 500 and 1000 fathoms; it crops out again at the surface in lat. 7° N. In the North Pacific it reaches the surface in 23° and 33° N., attaining a depth of 100 fathoms in lat. 28° N. The very low surface specific gravity observed in lat. 9° N. is purely superficial, and does not affect the mean specific gravity of the water at the position at all. As in the Atlantic, the minimum specific gravity is found usually at a depth of about 1000 fathoms, but in the Pacific we have light water approaching the equator from *both* sides, whilst in the Atlantic it occurs in a marked degree only from the south; and in the North Pacific by consequence the mean specific gravity is lower than in the south, the contrary being the case in the Atlantic, and no doubt the configuration of these two oceans is the chief cause of their diverging conditions, the North Pacific being a wide open bay, whereas the North Atlantic is more like a lake.

In general, then, it will be seen from these diagrams that, as a rule, the specific gravity diminishes from the surface down to a depth of 800 or 1000 fathoms, and then increases towards the bottom, where in the Pacific a very uniform specific gravity of 1·0257 to 1·0259 is found. The same value is found in the South Atlantic, but it increases as we go north, and the mean bottom specific gravity in the North Atlantic is 1·02616 for depths between 2000 and 3000 fathoms, and 1·02632 between 3000 and 4000 fathoms. The section depicted is along a central meridian; nearer the western side somewhat lighter water is met with at intermediate depths, but the difference is not such as to alter the character of the distribution. In the trade-wind regions the specific gravity decreases from a maximum at the surface to a minimum at about 1000 fathoms, and then slowly increases again. In the regions of the equatorial calms and rains the specific gravity most commonly increases from a minimum at the surface to a maximum at a depth of from 50 to 150 fathoms, from which point, downwards, it follows the same law as in the trade-winds. The reason of the existence of the subsurface maxima is, I think, easily explained by the fact that the water concentrated on both sides of the equator is driven by the wind towards the equator, where there is a constant supply of fresh water of high temperature, beneath which it is forced to dip. If we start from the source of the trade-wind we find, that while it is concentrating the surface-water it is always forcing it further into warmer latitudes, where, owing to the rise of temperature, the water, though it has become salter, has at the same time become lighter. As the equator, however, is approached, the rise of temperature with decreasing latitude diminishes, and the water thus becomes liable to sink of itself, even although it were not covered over by the tropical rains. A large quantity of water forced northwards towards the equator passes into the North Atlantic, owing to the preponderating force of the south-east trade. Here it follows the course of the equatorial current into the Caribbean Sea, reappearing doubtless as the Gulf Stream, and ultimately forming part of the great lake of warm and dense water which forms the Sargasso Sea; the configuration of the North Atlantic being such as to afford no facility for an exit current at the surface. The Sargasso Sea, however, is bounded, independently of land, by a complete series of tangential winds and currents which conspire to keep water, which has once got in, from easily getting out again. Being in the centre of the north-east trade-wind, the evaporation which goes on is very great, whilst at the same time a not insignificant yearly oscillation of temperature takes place, the two causes combined materially assisting the propagation downwards both of heat and saltness, and in point of fact we find that in both these respects the waters of this region exceed those of any other part of the ocean. This is particularly well shown if we compare the North Atlantic with the North Pacific. The mean specific gravity of the water at 30° 22′ N. lat. and 154° 56′ W. long., as determined from observations made at ten different depths on the 21st of July, 1875, was 1·02547, the depth being 2950 fathoms; at 26° 21′ N. lat. and 33° 37′ W. long. the mean specific gravity was 1·02721, from observations at nine different depths on the 3rd of May, 1876, the depth being 2700 fathoms. The mean temperature of the water was at the Pacific station 2·98° C. (37·36° F.) down to 2700 fathoms, and at the Atlantic one 5·05° C. (41·09° F.). If we take the mean temperature of the water down to 1500 fathoms, we have for the Pacific station 4·24° C. (39·63° F.), and for the Atlantic one 7·44° C. (45·39° F.). From observations made in the *Porcupine,* we find in 48° N. lat. a mean temperature down to 1500 fathoms of 6·39° C. (43·51° F.) and in 55° 40′ N. lat. a mean temperature down to the same depth of 6·17° C. (43·11° F.). It is, therefore, in every way likely that a high specific gravity prevails also down to the bottom. In treating of the concentration of the North Atlantic it must be remembered that that ocean is the recipient of all the brine eliminated from the Mediterranean, where the evaporation goes on with great vigour. Notwithstanding the great supply of fresh water from the numerous European rivers and the Nile, which is constantly being poured into it, and the rain which falls on itself, there is a constant deficiency in the amount of water present in its basin. That this is so, is evident from the existence of a constant inflow through the Straits of Gibraltar at the surface and southern side, and outflow at the bottom and northern side. Dr. Carpenter, in his report on the scientific researches in the *Shearwater,* points out very clearly that though both currents are affected by the tides, being, indeed, at certain times reversed in their direction, still the balance is decidedly in favour of an inflow of comparatively fresh surface-water, and an outflow of salt bottom-water; and he recognised the presence of the latter distinctly at the bottom, in a sounding about 45 miles W.S.W. of Cape St. Vincent, in 1500 fathoms. The gauging of currents of such dimensions with sufficient accuracy to be able to estimate, even approximately, the amount of yearly outflow from the Mediterranean, is a work involving great labour and constant observation throughout a whole year; moreover the measuring of the direction and velocity of under-currents is still accompanied with difficulty and uncertainty. By combining, however, observations of specific gravity with the current measurement, the work is simplified. Supposing the surface inflow to be thoroughly gauged, so that the supply per annum of Atlantic water to the Mediterranean is accurately known, and its mean density (at constant temperature) to be also known; let the mean density of the outflow-water be also ascertained: then if the Mediterranean is in a state of equilibrium, that is to say, if it is not salting up, as much salt must come out of it as goes in; or, the volumes of the two currents must be in the inverse proportions of their mean saline contents. Dr. Carpenter gives the specific gravities as 1·027 and 1·029, corresponding to 3·63 and 3·89 per cent. saline contents respectively. Hence the volumes of the two currents must be in the proportion of 9334 to 10,000; that is, for every 10,000 parts of Atlantic water entering, 9334 parts of Mediterranean water must go out, leaving 666 for the water evaporated. Sir John Herschel, in his 'Physical Geography' (p. 27), considers that, after allowing for the supply of fresh water by rivers and rain on the sea itself, the yearly evaporation is so great as to remove annually 335 cubic miles of water. With this datum the proportion above gives 5000 cubic miles as the annual inflow of Atlantic water, and 4667 cubic miles as the annual outflow of Mediterranean water. The inflow would be provided by a mean annual easterly surface current 5 miles wide, 120 fathoms deep, and flowing at the rate of 20 miles a day. It is probable, however, that Herschel's estimate of the evaporation is too high, because we know now, from the works of the Danube Commission, that the water supplied by that river is at least double what was assumed for the Nile. If we make the evaporation 300 cubic miles, the depth of the inflowing stream is reduced to 108 fathoms, the other dimensions remaining the same.

Whatever be the actual dimensions of the currents in question, there can be no doubt that there is a resultant outflow of very salt water into the North Atlantic, and there can also be no doubt that it contributes in some degree to the very high specific gravity and also to the temperature of the deep water of that part of the ocean. In the diagram giving a meridional section of the Atlantic, we see how the equi-saline lines run up into the North Atlantic, where they curve downwards and retreat southwards, nearly all the lines following in the same way. There are evident indications of a locality somewhat further north than is embraced in the diagram, where the specific gravity will be the same, or very nearly so, all the way down; and it is probable that the lines of equal saltness will approach this spot from the north in somewhat the same way as they do from the south, coming downwards, and returning north at a greater depth. It is here that the greatest mixture of surface and deep water takes place, and it is due in a great measure to the system of convection caused by pronounced annual variations of temperature in a comparatively dry atmosphere.

Judging from the observations made on board the German ship, *Gazelle*, there are indications of the existence of a similar region in the Indian Ocean. The observations made on the specific gravity of the bottom-water shows a very marked change about latitude 43° s. In 45° s. the specific gravity is 1·0256, the same as I observed all over the Southern Ocean. In 42° s., however, the specific gravity is 1·02617, and increases towards the north, being as high as 1·02682 near Mauritius, the surface being only 1·02624 at the same place. In a sounding in 1900 fathoms just off the Agulhas bank, I observed a bottom specific gravity of 1·02611, which could only have come from the Indian Ocean. The surface-water of this ocean is not remarkable for saltness: indeed, in the equatorial part it is very much below the average of Pacific equatorial water. There is, however, one region in the northern part of this ocean, in which concentration goes on with very great vigour, namely, in the Red Sea; and just as the evaporation of the water in the Mediterranean varies the specific gravity of the deep water of the North Atlantic, so may the Red Sea furnish concentrated water to the depths of the Indian Ocean. An objection might be raised to this source of the heavy water observed by the *Gazelle* between Mauritius and Australia, from the fact, that the temperature of the bottom-water was not above the normal, whereas water coming from the Red Sea must enter the Indian Ocean with a temperature of 70° F. The effect of concentration in raising the temperature in the subsurface-water of this ocean is very evident; in lat. 24° 41′ s. the mean temperature of the water down to 1500 fathoms was 8° C. (46·4° F.)

In the Pacific, as we have seen, the amount of concentration which goes on in the northern part is insignificant, a circumstance which is due no doubt to the openness of its basin allowing free interchange of water, and to the feebleness of the north-east trades. During one-half of the year too, the south-west monsoon extends over a great part of the ocean, adding greatly to the dilution of its waters. The bottom-water, however, both in the North and South Pacific, is of the same specific gravity.

From the slight sketch which has been given of the distribution of specific gravity in the ocean, it will be seen that it depends principally on the elements which go to make the climate, and in particular on the humidity and rate of motion of the air; it therefore stands in intimate relation with the prevailing winds: and, in fact, if we compare our chart of specific gravities with one giving the isobarometric lines, we shall find that the maxima of concentration lie in the northern hemisphere to the south-west, and in the southern hemisphere to the north-west of the barometric maxima. The great evaporating power of the trade-winds depends on the fact that they start dry in a cool region, and pass during their course always from colder to hotter regions; so that, as they proceed, although taking up more moisture, their capacity for taking it up continually increases, until the equator is approached, where the change of temperature is slight, and evaporation ceases along with the steadiness of the wind. The westerly winds of the north and south temperate regions, which take their rise in the same regions of barometric maxima, do not develop any remarkable evaporating power, because, travelling from warmer to colder regions, they are very rapidly saturated with moisture. In fact, the saltness of the water at any place becomes ultimately a function of the *relative dryness* of the atmosphere in the locality; that is, the further the air is removed from saturation with moisture the greater will be its evaporating power, and, consequently, the more marked will be its effect in the resultant saltness of the water exposed to its action. The regions, therefore, of high specific gravity of ocean water will coincide with those of high atmospheric dryness, and those of low specific gravity of the water with those of low atmospheric dryness. Thus, in the trade-wind regions we find the highest specific gravity of the water associated with the greatest dryness of the air, and in the region of the equatorial calms we have a low specific gravity of the water associated with heavy rains and a damp atmosphere.

V.—*Account of the Pundit's Journey in Great Tibet from Leh in Ladákh to Lhása, and of his Return to India* viâ *Assam.*

By Captain H. TROTTER, R.E.

[*Read*, May 14th, 1877.]

NAIN SINGH, the explorer who undertook this journey, is the original Pundit whose journey to Lhása in 1865 from Katmandhú, the capital of Nepál, was described at length by Captain Montgomerie, R.E., in the Trigonometrical Survey Reports for 1866–67. The Pundit had been in the service of the brothers Schlagintweit, while they were carrying on magnetic and other scientific observations in Ladákh and Kashmir in 1856 and 1857; he was subsequently appointed head-master in a Government Vernacular School in his native district of Milam in Kumaon, and remained in the Education Department until 1863, when, at the instance of Colonel J. T. Walker, R.E., the erintendent of the Great Trigonometrical Survey, he was entertained for employment as a Trans-frontier explorer, and duly trained. From that time to the present he has been constantly engaged either in carrying on explorations himself or in training other natives to follow in his footsteps. In 1865–66 he made the famous journey, alluded to above, from Katmandhú to Lhása, and thence to the Manasarowar Lake and back to India.* This exploration earned for him the present of a Gold Watch from the Royal Geographical Society of London, which unfortunately was subsequently stolen from him by one of his own pupils. In 1867 he went in charge of a party of natives, and did excellent service in exploring and surveying the head-waters of the Sutlej and the Indus Rivers.† In 1870 he was deputed to accompany Mr. (now Sir Douglas) Forsyth's first mission to Yárkand, but shortly after the Mission left Leh he was sent back to India. In 1873 he was sent under my own orders with Sir Douglas Forsyth's second mission to Yárkand, in connection with which he did much good service. In July 1874, while I was at Leh, after the return of the Mission, the Pundit having volunteered to make a fresh exploration, I was authorised by Colonel Walker, R.E., to despatch him on a journey to Lhása, now to be described.‡ His instructions were to proceed by a much more northerly route than the one he had previously followed. From Lhása he was to endeavour to get attached to

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* See 'Journal Royal Geographical Society,' vol. xxxviii., 1868.

† *Idem*, vol. xxxix., 1869.

‡ It appears that ever since the conquest of Ladákh some 150 years ago by the Sokpo Gyalpo Galdán Chang, the Rájá of Lhása, it has been customary for a large caravan to leave Leh for Lhása once in every three years. The leader has the honorary title of Lopchák,[1] and is generally one of the leading officials of Ladákh. The party leaves Leh in July and August, and proceeds *viá* Gartokh, Manasarowar, Tádum, and Shigátzé to Lhása, where they generally arrive the following January. Lengthened halts are made on the journey at the above-mentioned places for the sake of trade. The caravan remains at Lhása till June or July, and then returns by the same route to Leh, which place they reach in December, *i.e.*, after an absence of one and a half years.

While in Tibetan territory the districts through which they march are bound to furnish gratuitously 300 yáks for the carriage of merchandise, as well as supplies and food for the travellers. As the quantity of merchandise sent with the caravan rarely attains the full amount for which carriage is sanctioned, the Lopchák in charge receives from the villages he passes *en route* some equivalent for the balance of carriage not required. As the Lopchák thus has his goods carried gratis, and receives in addition considerable payment in lieu of carriage, he is naturally well able to make a large profit on his venture. He is provided by the Kashmir authorities before starting with 15,000 rupees' worth of goods, chiefly silks, shawls, and saffron. On his return he is expected to pay into the treasury double the amount of the advance that was made to him. This he does from the proceeds of the tea, wool, turquoises, and silver bullion which he obtains from Tibet in exchange for the wares taken from Ladákh.

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[1] **The Tibetan official, who heads a similar caravan which goes every three years from Lhása to Ládakh, is termed Jung Chongpen or Cha-aba.**

the caravan which proceeds thence every three years to Pekin. If he failed in accomplishing this, he was to endeavour to return to India by an easterly route from Lhása, down the course of the Brahmapútra if possible.

On the 15th of July, 1873, the Pundit and his companions left Leh. On the 21st they reached Tánksé, three marches further on; at Chágra they found a summer encampment of shepherds, the last inhabited spot on the road to Yárkand.

From Chagra they followed the Changchenmo route to Yárkand, halting at the foot of the Lankar or Marsimik Lá * (Pass). On the following day they crossed the pass (18,420 feet high), and then quitted the Yárkand road and turned off to the east; crossed the Kiu Lá, still higher than the Marsimik, and encamped for the night at Pángur Gongma, after a march of 9 miles.

The Pundit was obliged to travel slowly, as the whole of his worldly possessions, including tent, bedding, and commissariat for the whole party, had to be carried on the backs of sheep. It is astonishing what admirable beasts of burden these animals make in a pastoral country. The Pundit started with twenty-six sheep from Tánksé. Of these some were eaten on the road, some became ill, and were exchanged for fresh ones; but four or five of the original lot reached Lhása, having in less than four months carried loads of from 20 to 25 lbs. each, over a distance of more than 1000 miles. Throughout the journey they never received a single ounce of food beyond what they could pick up for themselves on the road and at the camping-grounds.

On the 28th of July the party descended the stream from the Kiu Pass to Ningri,† a camp which takes its name from a large heart-shaped mountain which overhangs it. On the following day, after descending the same stream to Mandal, they reached its point of junction with the Niágzu stream, up which they proceeded as far as Niágzu Rawang, encountering *en route* a large party of Tánksé villagers returning from Rudokh with wool and salt.

At the camp were a number of men collecting saltpetre, who stated that the Jongpon or Governor of Rudokh had ordered them to pay their taxes for the current year in that article. It is obtained by digging up the soil, which is placed in brass vessels; hot water is poured over it; the water dissolves the saltpetre, and is then decanted off into another vessel; after a time the water cools and the saltpetre is precipitated. One man can manufacture a sheep-load, or about 20 lbs. weight of saltpetre, in the same number of days.

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* *Lá* is the Tibetan word for *Pass*.

† *Ning*, heart; and *ri*, mountain.

At Niágzu Rawang is the boundary between Tibet and Ladákh;* the right bank of the stream belongs to the latter and the left bank to the former. A day's halt was made here to rest the sheep, and the Pundit made an excursion a few miles up the Rawang stream to Rawang Yokmá, a winter encampment belonging to Tánksé, in the neighbourhood of a favourite grazing-ground, where, in addition to abundant supplies of grass, there is also—a rare thing in Ladákh—a large supply of jungle wood.†

From Niágzu, six short marches brought our travellers to Noh. The country through which they passed was almost uninhabited; a few solitary tents belonging to Noh shepherds and a single hut at Gonu Chowki, occupied by a small frontier guard, were the only habitations passed *en route.*

[As an Appendix is given, describing at considerable length each day's march throughout the whole of the journey from Leh to Lhása and thence on to India, it is unnecessary here to describe the road in detail. Maps of the country about the Pangong Lake, up to within a few miles of Noh, have already been published by the Great Trigonometrical Survey Department; the Pundit's route from that point is shown on the map accompanying this narrative, which has been carefully constructed from the Pundit's route-survey, based on his astronomical observations for latitude and his hypsometric observations for height above sea-level.]

Noh is a small village in the Rudokh district, containing about twenty huts, built of stones cemented by mud. It has a small permanent population, which is increased largely in the winter months by numerous shepherds, who during the summer are scattered in tents in twos and threes in whatever parts of the district grass and water are to be found in sufficient abundance for their numerous flocks of sheep and goats. The chief man of Noh, Changkep by name, whose official title is *Lhámba*, was at the time of the Pundit's visit at a camp called Pángdá, about three days' journey north-west from Noh.

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* According to the Indian survey maps, the boundary line between Ladákh and Tibet is a good deal to the west of the line as given by the Pundit. The latter states that the stream of the Niágzu Valley which flows southwards near the meridian of 79° from Mandal to the Kharnak Fort is the true boundary. The one given on the survey map, viz. the watershed to the west of the abovementioned stream, is derived from Major Godwin-Austen's plane-table survey of the country to the north of the Pangong Lake in 1863. This survey extends to within a few miles of Noh, and the details of it generally agree most satisfactorily with the Pundit's route survey from Lukong to Noh, although there is this discrepancy in the position of the boundary line.

I find on a reference to Mr. Walker's map of the Punjab and Western Himalayas, which accompanies General Cunningham's well-known work on Ladákh, that Niágzu is there also given as the boundary between the two countries, but that south of Niágzu the watershed to the *east* of the Niágzu or Chang Parma River is shown as the boundary. The Ruang (or Rawang) stream which enters the main valley north of Niágzu is there shown as belonging to Tibet, but it appears from the text of the Pundit's narrative that he ascended the Ruang stream and found there huts and a grazing-ground belonging to the people of Tánksé.

† The wood is of three kinds; *changma,* willow; *shukpa,* pencil cedar; *womphu,* ? tamarisk.

The Lhámba is under the immediate orders of the Jongpon or Governor of Rudokh, whose jurisdiction extends over that portion of North-Western Tibet which lies to the north of the Singh-gi Chu branch of the Indus, as far east as the Thok Jálung gold-fields.

The Jongpon of Rudokh is in his turn subordinate to the Gárpon of Gártokh, who has also under his orders the Jongpons of the large districts of Gugi (Duba) and Purang, as well as other independent Pons (or Rájás) of Western Tibet. The Gárpon is under the immediate order of the Gyálpo or Rájá of Lhása. The office of Gárpon is only tenable for three years, and is always held by a native of Lhása, who is appointed by the Gyálpo. The Jongpons are also generally changed every three or four years.

The province of Western Tibet is frequently termed Nari Khorsum. The inhabitants of the northern portion, *i.e.* the district through which the Pundit travelled, are called by the settled population to the south Champas or *Changpas, i.e.* literally *North-men*. By the inhabitants of Turkistán they are called *Tághlik*, or mountaineers. The Champas encountered by the Pundit were, contrary to the generally received opinion of them, quite inoffensive people, of the same class as the people of Rudokh and the more civilised districts farther south.* They are all Buddhists, but religious edifices are scarce in their country. On the Pundit's route through this portion of Tibet he came across no *Gonpa* or monastery, although he occasionally encountered *Mánis* and *Churtáns*.†

The road from Noh skirts the Pangong Lake, which at Noh is joined by a stream from the north-east, up which goes a good road to Khotan, *viâ* Polu and Kiria.

The distance to Khotan by this road is about 450 miles. For a distance of 40 miles from Noh it gradually rises to a height of 15,500 feet, and then for about 160 miles as the crow flies, crosses, in a north-easterly direction, a series of elevated plains and ridges, before it descends somewhat suddenly to the plains of Eastern Turkistán. The average height above sea-level of the halting-places on the elevated plain to the north of Noh is 16,500 feet.* This vast highly-elevated plateau over which the road passes is the eastern continuation of the Ling-zi Thang and Áksu Chin plains, which lie at a similar, or in places even a higher, elevation in a north-westerly direction from Noh, between the Changchenmo River and the Kuen Luen Range, and have to be crossed by the traveller who adopts the Eastern (or Changchenmo) route between Leh and Yárkand. To the north of the Kuen Luen there is a rapid fall into the plains of Eastern Turkistán.

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* I have myself encountered Champas in the Rupshu district of Ladákh to the west of Chinese Tibet. The habits and customs of these people appear to be just the same as those of the same class who live over the border.

† A *churtan* or *chhartan* is defined by Cunningham as a "holy receptacle" or "offering repository." It is a pyramidal-shaped building erected in honour of some of the holy Buddhas. A *máni* is an oblong dyke or pile of stones 4 or 5 feet high and from 10 to 12 feet broad, varying in length from 20 feet to nearly a mile. They are entirely composed of stones said to be deposited one by one by travellers passing by. On each surface stone is generally inscribed the well-known Buddhist formula, "*Om maní padmí hung.*"

This Tibetan plateau extends eastward, as we shall see in the course of this narrative, as far as the head-waters of the great rivers which water China,—in fact for a distance of more than 800 miles to the Bourhan Búda Mountains (south-west of the Koko-nur Lake on the road between Lhása and Pekin), where we still find, according to the Abbé Huc and the still more recent researches of the Russian Captain Prejevalski, a tableland rising from 14,000 to 15,000 feet above the sea-level, above which tower gigantic snow-covered mountains.

Seven miles to the east of Noh is the eastern termination of the series of lakes known to us as the Pangong, but better known to the Tibetans as the *Chomo Gna Laring Cho*, which, being literally interpreted, means "Female narrow very long lake." Its extreme length from the west end at Lukong is exactly 100 miles, while the breadth probably nowhere exceeds six or seven.†

At its eastern extremity it is entered by a small stream, 3 paces broad and 1½ foot deep. Although the greater portion of this lake has been previously surveyed and described, its eastern limit has now been determined for the first time. It is a curious fact that the water at the eastern extremity is sweet and good to drink, while that at the west end is very brackish. It has been conclusively shown by Major Godwin-Austen that this lake once upon a time drained into the Shyok, but at present it forms the most western of a numerous series of inland lakes with no outlets, which we shall find stretch for a considerable distance across the elevated plateau of Central Tibet.

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* For details of this road see Route XIV. of Section G of Geographical Appendix to the Report on the Survey Operations in connection with the mission to Yárkand and Káshgar in 1873–74.

† The depth of the Pangong Lake at its west end was found by soundings that I made in 1873 to be nowhere greater than 136 feet.

Noh to Thok Daurákpa.

From Noh the Pundit toiled on for many weary marches over this Tibetan plateau; his road lay eastward along a wide, open, grassy valley varying in width from 6 to 10 miles, bounded on the north and south by low grass-covered hills, through which occasional openings gave a view of extensive plains stretching away as far as the eye could reach. Beyond the hills sometimes appeared snow-capped mountains, while an occasional shepherd's tent in the foreground, and the frequent appearance of large herds of wild asses, antelope, and gigantic wild sheep,* helped to relieve the monotony of the journey. In almost every day's march large sheets of water were passed, generally salt, but occasionally fed by fresh-water springs. At the latter the Pundit and his companions would fill their water-skins,† as they rarely knew from day to day whether or no they would be able to obtain a fresh supply on the road. More than once their supply of this precious fluid was exhausted, and on one occasion the whole party were more than twenty hours without fresh water. For fuel, also a traveller's necessary, they were better off; the *argols* or dung of the numerous flocks of wild animals were a never-failing source of supply, while occasionally, but rarely, firewood was obtained in considerable quantities. At Tháchap Cho, a fresh-water lake, eight days to the east of Noh, and the 27th halting-place from Leh, a large stream flowing from some snow-covered hills to the north-east of the lake was found to be covered on both banks with a dense forest of willow, tamarisk, and other trees and shrubs.‡ For the first thirty marches from Noh the heights of the camping-grounds varied between 13,700 and 15,000 feet, and for the rest of the journey to Namcho the ground was somewhat higher, but there was no considerable rise or fall throughout this portion of the Pundit's route. The large, flat, open valleys traversed by the Pundit, locally termed *Sangs*, appear to be much of the same nature as the *Pámírs* between Eastern and Western Turkistán and the *Jilgas* § of Northern Ladákh. These Sangs of Tibet, however, would seem to have more of plain and less of precipitous mountains than either the Pámírs or the Jilgas.

The road for the first ten marches from Noh passes through the Rawang *Changma* or *Northern* Rawang district, and is nearly parallel to, and north of, at a distance in places of only a few miles from, the route followed by another Pundit on a former occasion while on his way from Rudokh to Thok Jalung through Rawang *Lhoma* or the *Southern* Rawang district, which is separated from the northern one by a low range of hills.

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* The *Ovis Ammon.*

† Made from sheep's stomachs; two of them would be slung across the back of a sheep.

‡ Termed *Pena, Birhá*, and *Dámá* (furze).

§ *Jilga* is the Turki word for a broad open valley.

The Pundit passed *en route* the salt marshes of Khai Cháká and Dakdong Cháká, from which the people of the surrounding country collect large quantities of salt, which they carry for sale to Ladákh. He states that the salt forms a crust lying like a sheet of ice on the surface of the mud. The salt-seekers sink through this crust up to their loins in mud and water, and remove the salt, which they subsequently wash, clean and dry in the sun.

At Chabuk *Zinga* or *village* (14,400 feet above sea-level) were two huts built of wood, and in the neighbourhood some twenty tents of shepherds were visible. Here there were a few fields where barley is grown, the first signs of cultivation that had been seen since leaving Noh. The Pundit is of opinion that were the country more thickly populated, there would be no difficulty in finding plenty of ground fit for cultivation. The Champa inhabitants appear, however, to care but little for grain, and live almost entirely on meat, milk, butter and cheese, the produce of their numerous flocks and herds. One sheep-load, *i.e.* 20 lbs., of flour, affords an ample supply for the consumption of eight or ten men for a couple of months. At the permanent camps they had large caldrons, generally made of stone; in these they used to make a very weak soup, into which they threw a handful of flour. This constituted the dinner for a large party. At their movable camps they cook in smaller vessels made of stone or copper (both of which are imported from Ladákh). All articles of copper or iron are very much valued, and a small axe of the Pundit's, which he kept for the purpose of breaking up ice, he might at any time have exchanged for two or three sheep.

The only articles that these people themselves manufacture are tents and very coarse woollen clothing. The former are black, and are made from yák's hair, and the latter from the fleeces of their sheep, which also produce the material for making the bags in which they take salt for sale in Ladákh.

Their wealth consists of their horses, flocks, and herds, from the products of which they are mainly supported; also in salt which they carry for sale to Ladákh, and in return for which they obtain flour, copper, stone vessels, and hardware. Most families possess a matchlock, generally of Nepál manufacture, and the men of the Rudokh district seldom move about without either a gun or a bow and arrows, in the use of which latter they are very expert. Like the inhabitants of other parts of Central Asia, they fire their guns while lying at full length on the ground, the muzzle being supported by a prong about a foot long, generally made of antelope-horns. Each gun has a piece of white bunting attached to the barrel, which is thus converted into a flag. Gunpowder is very scarce, and is generally preserved for special occasions.

The Pundit states that on a former journey, when he visited a large fair at Gártokh, the young men, who are all expert horsemen, used to practise very successfully at a mark while going at full speed on horseback.* Each competitor carried two guns and a bow and arrows, and having fired off his gun used to discharge his arrows.

The Champas are keen in the pursuit of game, which they kill in large quantities, partly with firearms and bows and arrows, but chiefly with a kind of trap called Redokh Chum,† very similar in principle to an English rat-trap. It consists of a ring made of rope, to whose inner surface are attached elastic sharp-pointed slips of wood converging towards the centre of the ring, where a space is left sufficiently large to allow the passage through it of an animal's foot. Small holes are dug in the ground near the water which the wild animals are known to frequent. These traps are placed at the top, hidden from view by a covering of earth, and attached by a strong rope, also concealed from view, to a stout peg, which is driven into the ground at a considerable distance off. The animals on their way to the water pass over the holes, and the weight of the body drives the foot through the ring. Once through, it is impossible for the animal to free his foot from the trap, and he soon falls a victim to the sword and spear of the hunter, who lies concealed somewhere in the neighbourhood. Great numbers of wild horses, sheep, and antelopes are killed in this manner.

For ten marches from Chabuk Zinga to Hissik Cháka the country was uninhabited; the road lay over a plain way similar to what had already been traversed between Noh and Chabuk. The Champas at the latter place had given our travellers general instructions as to the line of road to be followed; but it appears that the latter had diverged too much to the north, and missed the encampment of Gargethol, which the Pundit had been previously told lay on the route to Lhása, and which he had intended visiting, as one of his servants had a friend there through whose influence they hoped to receive assistance in prosecuting the onward journey. The Pundit had now entered the Khámpa or Kampa district, renowned for the bad character of its population, and on arrival at Hissik Cháka (on the 25th of August) was greatly disturbed in mind at seeing men approaching them from a distance with yáks and ponies. Not knowing what to expect, he immediately concealed in the earth his instruments, the greater part of his clothes, and a few bags of grain, and remained behind, while he sent on two of his men to reconnoitre and make inquiries.

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* This is an amusement I have often myself seen in Eastern Turkistán.

† Literally *animal-catcher*.

The strangers fortunately turned out to be residents of Gargethol, the place the Pundit was aiming at reaching, and which lay about a day's march to the south-west of Hissik Cháka. On the following day (August 25th) they travelled together to Gargethol, where they found a large encampment of Khámpas, and had the good fortune to encounter the man they had been looking for. It appears that in years gone by the Pundit's servant had struck up a great friendship in Ladákh with a medical practitioner, who was now a man of great influence amongst the Khámpas. It was in order to find him that the Pundit had turned back to Gargethol. When found, he did not deny his old friend, but, on the contrary, was of the greatest assistance, as he gave letters to the Pundit for the *Gombo** or headman of Garchethol, another Khámpa district several marches further east.

The Khámpas who inhabit these two districts of Gargethol and Garchethol must not be confounded with the Changpas or Champas, an entirely different race. The Khámpas originally came from the country of Khám, which lies to the north-east and east of Lhása.† They number in Gargethol about seventy tents, with a population of 600 or 700 souls. In Garchethol there are about one hundred tents.

These Khámpas had migrated from their own country (near Ziling,‡ to the east of the Koko-nur Lake) about twenty-five years prior to the Pundit's visit. They travelled *viâ* Lhása and the Manasarowar Lake, near which place they plundered a caravan, and fled with their booty to their present camping-grounds, which, prior to that time, were uninhabited. Soon after settling there, they were called on by the Garpon of Gártokh to pay tribute, which they now do annually to the extent of 5000 Náktang, or tankas, *i. e.* about rupees 2000 (200*l.*), or its equivalent in gold, ghi,* horses, and cattle. This tribute is paid in Gártokh, and a punctual payment doubtless secures a certain immunity from their peccadilloes being inquired into. They possess large herds of cattle, &c., each tent having from 10 to 60 horses, and from 500 to 2000 sheep. They despatch annually to a fair at Gáni-ma, near Manasarowar, large quantities of sheep and goats' wool, salt, and gold; and, according to their own account, when they have finished their mercantile transactions, they send on the cloths, &c., that they have purchased, under the escort of the older and less active members of the tribe, while the young men start on some marauding excursion, the victims of which are generally travellers, and strangers to the country. The Khámpas are well armed with guns and swords, which latter are constantly worn even by boys. The scabbards are often handsomely ornamented with gold, turquoises, and coral.

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* *Gombo* is the Tibetan term for headman, and corresponds to the Ladákhi *Goba*. The equivalent word in Nari Khorsum is *Gadpu* or *Ganpu*.

† Mr. Cooper, the traveller, in his attempt to ascend the Brahmapútra River came across a tribe called *Khámtis*, who were said to have formerly emigrated from the country about the head-waters of the Irawaddy. It is, I should think, not impossible that Khámpas and Khámtis both come of the same stock.

‡ According to the Abbé Huc, the capital of the Khám district is *Tsiamdo* or *Chkámdo*, a well-known place on the road between Lhása and Pá or Bachang. *Ziling* is the Tibetan pronunciation of *Sining-fu*, a Chinese town in Kansu.

The men are fine, large, broad-shouldered fellows. They wear, both in summer and winter, *postins* made of sheep-skins, the hair being turned inside. These coats are worn short, extending to the knees only, and are fastened round the waist by a woollen girdle, above which the coat is roomy and capacious, affording ample space for the storage of their goods and chattels when on a journey. They have felt hats, resembling in shape a broad-brimmed English *wide-awake*, and leather boots with woollen tops and pointed toes. They have no hair on the face, and that of the head is plaited, Chinese fashion, into pigtails. The women dress very much as the men, but their postins are longer and less roomy. They wear round leather caps and very long hair, to the plaits of which are fastened long pendants nearly reaching the ground, profusely ornamented, chiefly with silver coins, of which the favourite is the British *rupee.* Both men and women are always in the saddle; they ride large, powerful horses, and both sexes are skilful riders. They are great sportsmen, and kill large quantities of game, chiefly wild horses, sheep, and antelope. They either employ fire-arms or kill their prey with swords and spears when caught in the Redokh Chum trap before described. Their capacity for eating meat appears to be unbounded, and they are apparently naturally somewhat bloodthirsty, as the Pundit states, that on several occasions when an animal had been killed, he saw the Khámpa boys kneel down and lick the blood off the ground. This fondness for blood would appear to be derived from a still earlier age, as the food given to infants, when their mothers can no longer support them, consists, in the entire absence of grain in the country, of pounded cheese mixed up with butter and blood. They are of the Buddhist religion, but their language is quite different to that of other Tibetans,* and only one man of the Pundit's party, who had resided some years at Sining-fu (to the east of the Koko Nur), was able to understand it and to make himself understood.

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* Clarified butter.

Between Gargethol and the Champa district of Shankhor, on the south, is a place called Gegha, where a large fair is annually held in July and August.

On the 29th of August the Pundit returned to Hissik Chaká, where he saw a large herd of *kiángs*, wild horses, fully 200 in number. He continued his route over uninhabited level plains, till the 1st of September, when, at a camp called Huma Cho, he met on the road the Gombo of Garchethol, a gentleman who was distinguishable from his followers, in that he wore a pair of golden earrings, of such length as to rest on his shoulders. The presentation of the letter of introduction from their medical friend at Gargethol secured our party a civil reception.

The following night there was a sharp frost, the first sign of the approach of winter.

On the 3rd of September they reached the village of Mango, the head-quarters of the Gombo, who had gone on ahead of the travellers. The Pundit paid him a formal visit in his tent—a large one made of yák's hair—and gave him a small present of sandal-wood. The Pundit was kindly treated, and on intimating to the Gombo that he was on his way to visit a celebrated monastery near the Namcho Lake, Chiring Dunduk (the Gombo) said he was himself about to move his camp several days' march in that direction, and proposed that they should perform the journey together. The Pundit gratefully acquiesced. On returning to his own tent, he found himself besieged by a host of curious Khámpas, who were all most anxious to become possessors of the various little articles of hardware he had with him, but he resolutely refused to part with anything.

Among other visitors was an old man named Sonám Darka, about eighty years of age, a native of a country near Lhása, who had been living as a servant amongst the Khámpas for several years, and had gradually accumulated a good deal of property. The Pundit, when he found that this man could speak good

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* According to the Pundit many words are identical, but the affixes and prefixes are entirely different to those of Tibet. The only point he could recollect is that the suffix *Mu* is the sign of the interrogative. This, curiously, is identical with the interrogative in the Turki language as spoken in Kashgar, and may perhaps indicate a common origin for the two languages.

Tibetan, succeeded in securing his friendship by the present of a couple of common sewing-needles, and obtained from him the following information about the neighbouring countries:—

The district to the north of Garge and Garchethol is a large uninhabited plain, called Jung Pháyil Puyil, meaning literally "the desert country in which the father and son have wandered," so called from a tradition that two men of the Shankhor country had, many years previously, entered this desert tract for the sake of hunting; but, after wandering about for a lengthened period, they both died there for want of water.* Some thirty or forty years before the Pundit's visit, and prior to the occupation of Garchethol by the Khámpa tribes who now dwell there, there used to be considerable traffic between the inhabitants of Nakchang (a district to the east of Garchethol) and a place called Nári Tháru, some 20 days' journey to the N.N.W. of Thok Daurákpa. To Nári Tháru merchants used to come from Nurla, a place 8 or 10 days' journey off in the Yárkin country, and the Tibetans used there to barter gold for grain and cotton cloths. The traders from Nurla were a people who used to shave their heads (on which they wore large folded cloths), and who used to cut the throats of sheep instead of strangling them, as is done in Northern Tibet. Sonám Darka also recollected a few words of their language, which the Pundit, who had only recently returned from Yárkand, at once recognised as Túrki. The road from Thok Daurákpa is said to traverse for 20 days' journey extensive plains, and then crosses a snowy range, at the foot of which lies Nári Tháru, where a considerable stream, the only one encountered on the journey, flows from east to west.† Sonám had in his youth made the journey several times, but the road had now been closed for at least thirty years, the reason given being that since the discovery of borax, or rather since borax has become a considerable article of trade between Tibet and Hindustan, the inhabitants of Nakchang now find a good market for it in the Nari Khorsum district, from which place they derive their supplies of grain instead of, as formerly, from Turkistán.*

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* Curiously enough, another Pundit on a former exploration brought intelligence of the existence of an *inhabited* country called Jung Pháyil Puyil in the direction now indicated; the name he had got correct, but it now appears to represent a desert tract, as the name itself proves.

† It is clear that Yárkin stands for Yárkand, and it is nearly equally certain that Nurla is a place called Núra in my map of Eastern Turkistán, on the direct road between Khotan and Polú. I find in a manuscript note in my possession that Sai Nurla, a place about one march to the east of Ganjutágh, and which is probably identical with Núra, is known as a place of export of grain towards Tibet. From Sonám's description of the road, and the knowledge that in clear weather a snowy range is said to be continuously visible along the road from Kiria to Charchand, I infer that Nári Tháru occupies a position at the foot of the northern bounding ridge of the Great Tibetan plateau, somewhat similar to that held by Polú and Sorghák, and probably lies approximately in latitude 36° by longitude 84°. The stream mentioned probably flows into the Great Desert, and may possibly be the same that passes by Charchand.

The Pundit mentions that amongst the sheep in Northern Tibet were some with large tails said to have been bred from some that had been brought many years before from Nári Tháru. The large-tailed sheep, or "Dumba," is the universal breed in Yárkand.

Sonám Darka had also on one occasion, some thirty years ago, made a journey from Thok Daurákpa to Ajan, a country about two months' journey in a north-easterly direction. The road lay throughout over an extensive plain, no large mountains being seen, or streams encountered *en route.* Drinking-water was obtained from a succession of small fresh-water lakes, mostly supplied from rain-water. Shortly before reaching the Ajan country, the road traverses a bare rocky range of mountains. Ajan itself was inhabited by the Sokpo Kalmucks, a nomadic pastoral people who obtained grain (rice and flour) from the neighbourhood of Karka, a large monastery said to be ten or twelve days' journey beyond the southern frontier of the Ajan country. Near Karka is a large city called Kokod, the residence of the Sokpo Gyalpo, the ruler of the Sokpo districts, while Karka itself contains several monasteries, one of which is the residence of the Yapchan Thámba (or Ringboché), the spiritual head of the Sokpo Kalmucks. The road just described is never now made use of, probably for the same reason which has led to the abandonment of the before-mentioned route to Nári Tháru, as well as on account of the difficulty of insuring a certain supply of water *en route;* no one would venture to travel by it unless after an unusually heavy rainy season. Wood and grass are said to be plentiful throughout.

Karka† is a name about which I have for some time past been endeavouring to obtain authentic information, but I can hardly venture to claim any great success in the attempt. It is first mentioned, as I far as I am aware, by Major Montgomerie, R.E., in his discussion of the work of the Pundit who explored the Namcho Lake in 1872. On the present occasion the Pundit had been specially instructed to make inquiries about it. He saw in Lhása some men who were pointed out to him as from Karka, tall, copper-complexioned, fine-looking men, but unfortunately he could not understand their language, and his stay in Lhása was so short that he was unable to learn anything definite about them.

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* Grain is, as may be imagined, not over-plentiful. A sheep's load of flour, say 20 lbs., is about the equivalent in value of a large sheep.

† *Karkha* was the name of one of the metropolitan sees of the Nestorian Church. Is it possibly the same place as the modern Karka or Karkha? *See* p. ccxliv. of Colonel Yule's preliminary essay to 'Cathay and the Way thither.'

As far as I can gather from inquiries made at Yárkand and from the information collected by the Pundits, Karka is situated about one and a half month's journey to the north-west of Nák Chu Kha, a large village situated on a river of the same name a few marches to the north-east of the Tengri Nur or Namcho Lake. At this village it is said that two roads diverge, one to Karka, passing in a north-westerly direction, and the other to Koko Nur, and Pekin in a north-easterly direction. The position of Karka thus obtained would agree approximately with an account I heard from a Kalmuck in Kashgár, which located Karka about a fortnight's journey to the south-east of Lake Lob. It probably lies somewhere between Lakes Lob and Koko Nur, and I think it not improbable that the country of Ajan to the south of it may be the same as the country of Anj Si, which is mentioned by Uspenski in the Russian 'Isvestia' as a country lying in a westerly direction from the Zaidan plain, which is to the west of Koko Nur.*

On the 4th of September the Pundit left Mango, in company with Sonám Darka, and the Gombo Chiring Dunduk, the headman of Garché, together with their flocks and herds; there were about six tents of Nomads in all. For four days they kept company, advancing slowly at the rate of about 8 miles a day. It is the habit of these people, when they have exhausted the pasturage near any one camp, to shift bodily to fresh ground; they were now on one of their customary moves. On the fourth day they reached Kezing, in the neighbourhood of which place are very extensive pastures sufficient for the subsistence of the Gombo's large flocks for a couple of months.

Some idea of the wealth of this people may be inferred from the fact that Chiring Dunduk was himself the fortunate proprietor of 50 horses, 400 yaks, and 2000 sheep. Other members of his tribe were said to be even more wealthy than he.

These Garché Khámpas, numbering in all about 100 tents, had only been settled in the country for about fourteen years. They are under the jurisdiction of the Gyalpo of Lhása, and are very much better off than their neighbours the Gargé Khámpas (who are under Rudokh), as they only pay what must be to them an almost nominal tribute (in gold) of the value of about 20*l.* This gold is obtained at Thok Daurákpa, to the east of Garchéthol, in exchange for the produce of their flocks, and for borax, extensive fields of which exist at Noring Cho, which were passed by the Pundit *en route* to Kezing.

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* I at one time thought that Karka might be merely a corruption of the word Kalka, and that the *Yapchan Tamba* of Karka might be the same individual as the Kalka *Yezuh Dampa* (of Shaw), the *Guison Tamba* (of Huc), and the *Kutuchta Gyen* of Urga (of Uspenski), the chief Láma of the Kalka country which lies on the southern confines of Siberia. It appears, however, from a study of Mr. Uspenski's notes in the 'Isvestia' that Urga is 3250 versts (more than 2000 miles) from Lhása, the road from which place passes by Nák Chu Kha, Koko Nur, and Sining-fu. The last-mentioned place is 4 long marches east of Koko Nur and 44 long marches south of Urga. These bearings and distances place it, I think, beyond a doubt that Karka and Kalka are not identical.

The Pundit appears to have ingratiated himself most successfully with the Gombo Chiring, for that chief very kindly made arrangements that he should travel onwards with two other men, servants of a merchant from the neighbourhood of Shigátzé, who were travelling with some spare yáks in advance of their master from Thok Jálung to Shigátzé; these men, for their own sakes, were only too happy to travel in company with the Pundit and his party.

From Kezing eastward for a distance of 80 miles, up to Thok Daurákpa, the country was uninhabited when the Pundit passed through it ; but it is occupied by the Khámpas of Garché at certain seasons of the year. There is capital grazing, and an abundant supply of water and fuel (argols) throughout. The road lies the whole way in one of the broad open *sangs* before described, lying between ranges of hills running east and west. South of the Tashi Bhup Cho, the southern range runs off in a south-east direction, rising rapidly in height, and forming a massive group of snow-covered peaks, known as the Shyalchi Káng Jáng, the positions of several of which were fixed by the Pundit, although at a distance of from 30 to 40 miles south of his road.

From this snowy group flows northwards a very considerable stream, the Shyal-chu, which was crossed by the Pundit in three separate branches, nowhere more than a foot in depth, but said to be passable only with very great difficulty during the floods caused by the melting of the snow in the summer months. This stream flows into the Tashi Bhup Lake, whose southern shore is about 2 miles to the north of the Pundit's road. From the eastern end of the lake a stream issues, whose waters are said ultimately to drain into the Chargut Lake, from which they emerge under the name of the Nák-chu-khá River, and flow eastward to the village of the same name which lies on the northern road between Lhása and Pekin. At the point where the Shyal-chu was passed by the Pundit, his road was crossed by another track going from Manasarowar to Nák-chu-khá, which passes south of the Tashi Bhup Lake, and then follows throughout its course the stream which emerges from the east end of the lake, and flows to the Chargut Lake and Nák-chu-khá. This road is said to be perfectly easy, and to abound with grass and water, but the country it passes through is uninhabited throughout.

The Pundit, who had been forewarned that the neighbourhood of the crossing of the two lines of road was a notorious place for robbers, took the precaution of pitching his camp 2 miles off the road. It is said that the custom of the Khámpa robbers who infest this country is to cut at night the ropes supporting the tent of the traveller, whom they fall upon and cut down while attempting to escape from the folds of his tent.

While under the immediate protection of the Gombo Chiring the Pundit had felt pretty safe, but he appears, not without good reason, to have passed several sleepless nights before he again reached inhabited country.

Travelling as a Láma he had affected great poverty, and throughout the journey he kept his rupees concealed here and there in the most out-of-the-way places imaginable. His chief repository was a very old and ragged pad carried on the back of a donkey, that had accompanied him from the west, and which animal, in consequence of the riches he bore, obtained amongst our travellers the *soubriquet* of *Sarkári Khizánchi*, or Government Treasurer.

The Pundit reached the gold-fields at Thok Daurákpa on the 17th of September, having taken on the latter part of the journey a somewhat difficult road over hills, in order to avoid the easier road to the south, which passes round the foot of the hills, but where he thought he was more likely to meet with robbers. He had now quitted the Khámpa country and had entered the Nákcháng Pontod district, in which he passed two or three abandoned gold-mines before reaching Thok Daurápka.

The Pundit found that the gold-fields in this portion of Tibet were of much less importance than those he had visited at Thok Jálung in Western Tibet on a former exploration. At Thok Daurákpa the diggers mostly dwell in caves excavated in the earth. These habitations, which are locally termed *phúkpá*, are thirty-two in number, and contain from five to twenty-five individuals in each, according to the wealth of the proprietors, who do not appear to select these buildings from choice, but rather from necessity, caused by the proximity of the Khámpa robbers, whose habit of cutting down first the tents and then the owners has been already mentioned. These underground caves are naturally far more secure than tents would be, and one man well armed could defend one of them against a large number of assailants. Besides these caves there were also some seven or eight tents belonging to travelling chants and recent arrivals. The diggers were mostly ngpas from the Nákcháng district to the east and south f the gold-fields; but there were also others from Western

Tibet and from Janglaché, a large town on the Brahmapútra, five or six days west of Shigátzé.

The proprietors of each *phúkpá* have also their own gold-pit,* in which they work (in the day-time only). One or two men are generally employed in quarrying the stone in which the gold is found. The pieces of stone are lifted up in baskets to the brink of the pit, and are there pounded into small fragments, which are deposited on a cloth, which is arranged on a slight slope and kept down by a number of stones so as to make the surface uneven. Water is then poured over it, and carries away the lighter portion of the soil, leaving the gold in the uneven receptacles that have been made for it. The largest piece of gold seen by the Pundit at Daurákpa was about one ounce in weight.

Unfortunately for the diggers, water is not found within a mile of the gold-fields, and has to be brought that distance in skins on donkeys which are specially kept for the purpose. These donkeys were the only animals of the kind seen by the Pundit between Ladákh and Lhása. It appears that they do not stand the cold well, and although their bodies were covered in profusion with the *pashm* or wool, which grows under the hair of nearly all animals in these very cold and highly-elevated regions, it was always found necessary at night to allow them to take refuge in the *phúkpás* inhabited by their masters.

Gold-finding does not appear to be a very lucrative occupation, and although the tax paid by the diggers to the *Sarpon* or Gold Commissioner of Lhása, viz. one *sarshia* (one-fifth of an ounce) per man per annum, is decidedly small, yet the profits appear to be but little more than is necessary to keep body and soul together. According to the Pundit, the pastoral population are far more prosperous than the gold-diggers, and lead a much freer, pleasanter, and more independent life.

The gold of Thok Daurákpa is said to be whiter and of better quality than what is found farther west. It is, however, more difficult to obtain, both on account of the soil, or rather rock, in which it is found being much more difficult to break up than the softer soil of Thok Jálung, and on account of the distance from which water has to be brought. At Jálung a stream runs through the gold-fields. The Pundit believes that there are enormous tracts of land where gold is to be obtained by digging, but where the absence of water would render the working of them unremunerative.

The Thok Daurákpa and Thok Jálung gold-fields are under the same *Sarpon* who makes the round of all the Tibetan gold-fields once a year to collect the taxes.

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* At Thok Jálung the arrangement is different: there the whole of the diggers work in one large excavation.

It would appear that the importance and value of the Tibetan gold-fields have been considerably overrated. The Pundit states that, besides the half-dozen places where gold-digging is now carried on in the neighbourhood of Thok Jálung, the only other gold-fields now being worked in Northern Tibet are at Thok Daurákpa, and two other places, of even less importance, at Táng Jung and Sarká Shyár, both of which are about six days' journey farther east. He believes that nearly the whole of the gold collected in Western Tibet finds its way to Gártokh, and ultimately through the Kumaoni merchants to Hindústán. He estimates the value of gold brought annually into Gártokh at about 80,000 rupees (or about 8000*l.* sterling).

The gold-diggers at Daurákpa dispose of most of their gold either to the Khámpas of Garchethol on the west, or the Champas of Nákcháng Pontod on the east, in exchange for the products of their herds and flocks. The rest of the gold is taken by merchants who bring tea from Lhása and from China.

A brick (*parka*) of tea, which weighs about five pounds, and in Lhása is worth say seven shillings, and in Ladákh twelve shillings (or more, according to quality), sells at Daurákpa for one *sarshia* of gold (one-fifth of an ounce).*

Thok Daurákpa to Lhása.

The Pundit only halted one day at the gold-fields and continued his journey on the 19th of September. His route lay over precisely the same kind of country that he had previously traversed; it crossed several streams, all flowing to the north, and ultimately finding their way into the Nák-chu-khá River. For the first three marches the country was uninhabited, but after leaving Lhung Nakdo numbers of Chángpa tents were almost daily seen from the line of march.

Although the plain he was now traversing was more than 16,000 feet above the level of the sea, the Pundit does not appear to have suffered very much from the great elevation; the weather was mild, and he speaks of the whole of the journey over the plains of Tibet as a delightful pleasure excursion, when compared with his experiences over the Karakorum and other passes on the road from Leh to Yárkand. The sheets of velvet turf covered with countless herds of antelope must indeed have formed a pleasant contrast after the equally elevated but bleak and uninhabited bare plains of Ling-zi Thang and Dipsang, in Northern Ladákh. The Pundit (who is fond of statistics) asserts that on one occasion he actually counted two thousand antelopes (*cho* and *gwa*) which resembled in appearance a regiment of soldiers, with their horns glistening in the sun like bayonets. The horns frequently found lying on the ground served him in lieu of tent-pegs.

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* At Thok Jálung on a former occasion the Pundit purchased one *tola* of gold = $\frac{72}{175}$ of an ounce (avoirdupois) for eleven rupees, *i.e.* the modern equivalent for an English sovereign. At Thok Daurákpa the price of the same amount of gold would have been about fourteen rupees.

In the Nákcháng Pontod (Northern and Southern) district, which extends for several marches east of Thok Daurákpa, there are altogether about a hundred and fifty families of nomads, all wealthy in horses, yáks, sheep and goats. Throughout Nákcháng the sheep are very large and strong, and are almost all black—a peculiarity of this district alone, those in Western Tibet and in Lhása being nearly all white. Yáks are used almost exclusively as beasts of burden, and on one occasion the Pundit met a caravan with two hundred of these animals carrying tea towards the west.

Nákcháng Pontod is under an official, a native of the country, the Garpon Durje Puntchok, whose dignity is hereditary. He collects the tribute for the Lhása authorities and remits it to Senja Jong, farther east. The tribute paid is almost entirely *ghi* (clarified butter).

The Changpas of Nákcháng, who are also promiscuously termed *Horpas* and *Dogpas*, speak a language which differs but little from that of Lhása, and the Pundit had no difficulty in carrying on conversation with them.

In the 8th march from Thok Daurákpa the Pundit encountered a lofty range of mountains which was crossed by a high but easy pass called Kilong, 18,170 feet above sea-level. This range runs southward and culminates in some enormous peaks known by the name of Tárgot Lhá, from which extends eastward a snowy range, numerous peaks in which were fixed by the Pundit, along a length of 180 miles, up to where the range terminates in a mass of peaks called Gyákharma, which also lie to the south of and very near the Pundit's road. The highest of these Gyákharma peaks was ascertained by measurement* to be 22,800 † feet above sea-level, and the Pundit estimates that the highest of the Tárgot peaks (which lay too far off the road for vertical measurement with a sextant) is at least 2500 feet higher than the highest of the Gyákharma group.

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* By double altitudes taken with a sextant from points whose altitudes have been determined by hypsometrical measurements.

† Between 21,000 and 22,000 feet in itinerary (p. 129); also 21,100 feet on map.—Ed.

Tárgot Lhá was seen from the Chapta Pass at a distance of over one hundred miles, and is believed by the Pundit to have been the highest mountain seen by him on his journey.

This range is probably not the watershed between the basin of the Brahmapútra and the lake country of Hor,* for the Pundit was informed that to the south of the range, running parallel to it, is a large river, the Dumphu, or Hota Sangpo, which ultimately changes its course and flows northwards into the Kyáring Lake.

The highest peak of the Tárgot Lhá group is called Tárgot *Yap* (or father), while an enormous lake which lies at the foot of its northern slope is called Dángrá *Yum* (or mother); these two, according to local tradition, are the progenitors of the whole world.† The circuit round the mountain and lake combined is a common pilgrimage not only for the people of the Hor country, but for their more distinguished co-religionists from Lhása. Similar circuits are made round the sacred mountain of Kailás, near the Manasarowar Lake.

The circuit round the lake alone occupies from eight to twelve days, the distance being about 200 miles, but the complete circuit of lake and mountain takes up nearly a month. The country people believe that if they make the complete circuit (termed locally *kora*) once, they will be absolved from ordinary sin; for a man to be cleansed from murder requires two *koras;* but if the round is completed thrice, even the murder of a father or mother will be atoned for. The Pundit did not feel much comforted on learning that this is all implicitly believed by the country people.

The district surrounding the Dángrá Yum and another smaller lake to the north of the road is called Nákcháng Ombo. It is enclosed by snowy mountains, and contains several villages, Nákcháng, Táng Jung, Kisum, Ombo, Sásik and Chakså; each village contains twenty or thirty houses, built of stone, and surrounded by richly-cultivated fields which produce a profusion of barley. The harvest was not quite gathered in on the 28th of September, the date of the Pundit's arrival at Ombo, the chief village of the district.

The existence of this cultivated Ombo plain enclosed by mountains, which in their turn are surrounded by boundless extents of pasture land, is a very curious feature.

The Pundit had not seen a single field of grain of any description since leaving Chabuk Zinga, thirty-five marches to the west, nor did he again meet with cultivation until reaching Tulung village, near Lhása, thirty-nine marches beyond Ombo. The height of the plain (15,240 feet above sea-level) is not less than that of the surrounding country, and although somewhat protected from the wind, it is no better off in this respect than the district of Nákcháng Gomnak, which borders it on the east, which is also well watered and has apparently a richer soil, but is nevertheless totally devoid of cultivation.

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* The general name of the district through which the Pundit had been travelling.

† The group of Shyálchi Káng Jáng Mountains to the west is said to be one of the daughters of this union.

According to local tradition, the Ombo country was once upon a time thickly populated and covered with villages. Two thousand years ago it is said to have been ruled over by a very powerful Rájá, the Limúr Gyalpo, who resided in a fort called Kiung Jung, on the banks of the lake (close by Thungrú), the ruins of which were pointed out to the Pundit. The Gyalpo Limúr was the ruler over the whole of the Hor country, and his wealth was said to be boundless. Amongst other riches he was the possessor of a golden saddle, and a turquoise as large as a goat's liver. He was overcome in battle by Digung Chanbo, the Gyalpo of Lhása, who, however, failed to possess himself of the saddle and turquoise, which were cast into the middle of the lake, where they are said to remain at the present day.

The Pundit is of opinion that the Dángrá Yum Cho, and the smaller lake of Táng Jung to the north, were formerly connected together in one vast expanse of water. The Dángrá Lake is even now so large, and the wind sometimes raises such violent waves, that the Pundit compares it to the ocean. The inhabitants of the Ombo or Pembo country, as it is sometimes called, although speaking the same language as the other Changpas or Dogpas who live in other parts of Hor, curiously enough, have considerable differences in their religious ceremonials. Instead of the usual well-known Buddhistic formula, "*Om máni padmi hung,*" they inscribe in their prayer-wheels and on their mánis the words "*Om máte moyé sálendo.*" They moreover twist their prayer-wheels in the reverse direction to what all other Buddhists do, and in making circuits round religious edifices they travel from right to left instead of from left to right, as is the invariable custom amongst all other sects. Others of their peculiar sect are said to reside in the Kham country east of Lhása.

The origin of the custom arose thiswise. When Sákyá Múni,* the great founder of Buddhism in Tibet, first came to the country, he was residing near the famous sacred mountain Kailás. Nárú Punchuk, a native of Khám, having heard rumours of his arrival, went on a pilgrimage to see him. Having arrived there, he found that the devout Sákyá was constantly passing his time in circumambulating the sacred mount, and this at such a pace that his would-be disciple was unable to overtake him, although he followed him round and round for several circuits. As Sákyá Múni followed the orthodox course (moving like the hands of a watch), the brilliant idea at last struck Nárú Punchuk that if he were to go round in the reverse direction he would soon meet him. This he did, and secured an interview, and, subsequently becoming a favourite disciple, he received in commemoration of this event, permission to found the sect who are now known as "Pembos," who make their religious circuits and twist their prayer-wheels in the opposite direction to that adopted by the orthodox Buddhists.

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* It is believed that Sákya Múni Buddha himself never went to Tibet, which was converted to the faith by later missionaries. The above and subsequent traditions must refer to some of these.

Near the ruins previously alluded to on the banks of the lake is a large natural cavern, containing the impress of the palm of Nárú Punchuk's hand. It is an object of worship to the people of the country.

Thus far on his journey the Pundit states that a cart might be driven all the way from Noh without any repairs being made to the road; but in crossing the range which bounds on the east the Pembo country, the path was steep and difficult. There is an alternative road, however, lying to the north, by which it is said a cart (supposing there to be such a thing in the country) might easily travel from Thok Daurákpa to the Namcho Lake without meeting a single obstacle *en route*.

The country to the east of the Pembo district is of a precisely similar nature to what the Pundit had already passed through on the west. It is inhabited as far as the Namcho Lake by pastoral Changpa nomads, who live mostly on the produce of their flocks and herds. No grain whatever is grown, but large quantities are imported from the Shigátzé and Lhása districts to the south. The inhabitants are well off, as, in addition to the produce of their flocks, they sell to the merchants of the south large quantities of salt, which is obtained from numerous *chákás* or salt lakes which lie at from eight to to twelve days' journey to the north of the Pundit's road.

The country is subdivided into districts, designated successively from west to east Nákcháng Gomnák, Nákcháng Dóbá, Yákpá Ngocho, Yákpá Jagro, Dé Cherik, Dé Tabárába, and Dé Taklung, which latter lies immediately to the north of the Námcho Lake. Each of these, as well as the district of Nákcháng Ombo, before described, has its own ruler or *Pon*, who decides the disputes of his subjects, and collects the revenue from them. The whole are subordinate to the two Jongpons of

Senja Jong, a place of considerable importance lying to the east of the Nákcháng Dóbá district, and containing from eighty to a hundred houses. These Jongpons are officials appointed from Lhása, and are changed every two or three years. Their chief business appears to be to collect the revenue and remit it to Lhása, and to act as a sort of court of appeal against the decisions of the hereditary *Pons* who rule over the smaller divisions. They do not seem to have a very difficult task, as their executive and administrative functions are carried out with the assistance of two or three writers only, and a couple of dozen guards sent from the Gyalpo's forces in Lhása. The revenue sent to Lhása consists entirely of *ghi.*

One of the most influential of the local *Pons* is the Garpon Changba Gyalpo, who resides at Kátmár in Nákcháng Gomnak; he appears to exercise considerable influence in the neighbouring districts, both east and west; and when the Pundit was passing through, had collected a considerable force of Changpas armed with guns and bows and arrows, with the object of settling a dispute (which was, however, subsequently diplomatically arranged) with another chief, who lived some distance to the east of the Namcho Lake.

A detailed account of the route followed appears in the Itinerary which accompanies this Paper, but a better idea of the nature of the country will perhaps be obtained from the map. The height of the plateau traversed appears to vary but little between 15,000 and 16,000 feet above the sea-level. The plain is, as a rule, confined between mountains which run parallel to the direction of the road, but a few transverse ridges of considerable elevation are crossed *en route.* The drainage all tends to the north, the streams from the snowy range to the south finding their way into numerous large lakes, which either lie in the *sangs* traversed by the Pundit, or are enclosed in similar *sangs* to the north. These lakes are the characteristic features of the country, and the Pundit may well be proud of the discovery and survey of such a numerous and extensive system. Of the whole series, extending from Noh to Lhása, the only one that has hitherto been known to geographers is the Nam Cho or Tengri Nur at the extreme east, which, although its position with regard to Lhása was approximately known, and was marked on the old Chinese maps, yet it is only within the last few years that its position and extent have been determined with anything like accuracy; this was done by another Pundit, a pupil of the veteran explorer whose discoveries I am now relating.

The largest of these newly-discovered lakes, the Dángrá Yum Cho, is about 45 miles in length, by 25 in breadth at its widest part; another large lake, the Kyáring Cho, is 40 miles in length, and from 8 to 12 across. The waters of the former are slightly brackish, but those of the Kyáring Cho, and nearly all the lakes to the east, are beautifully fresh, and, as well as the streams which feed them from the south, contain abundance of fish, and are covered by myriads of wild-fowl. Unfortunately for themselves, the Changpas have a prejudice against killing and eating either fish or fowl.

On the occasion of the former exploration of the Namcho Lake it was frozen over, and although the Pundit made the complete circuit of the lake, he was unable to discover any stream flowing from it. On the present occasion, however, our Pundit, having visited it in the autumn, before its waters were frozen, distinctly traced a stream issuing from its north-western extremity, and flowing in a westerly direction. Although, at the time he saw it, the stream was not more than a few feet in width, the watercourse was broad and deep, and in the summer months must give exit to a large river.

It appears that the drainage from nearly all these lakes finds its way either into the Chargut Cho, a large lake said to be twice the size of any with which we are as yet acquainted in these parts, or into the Nák-chu-khá, or Hotá Sangpo, a large river which issues from the Chargut Cho and flows eastward. The southern banks of this river are said to be inhabited at certain times of the year by shepherds from the Dé Namru district (north of Dé Cherik). The country to the north of the Nák-chu-khá is believed to be uninhabited.

The largest river crossed by the Pundit in this section of his travels was the Dumphu or Hotá Sangpo, which receives the drainage of the southern slopes of the Tárgot-Gyákharma range of mountains, and flows into the Kyáring Cho, forming one of the numerous sources of the Nák-chu-khá.

The subsequent course of this last river, of which some of the head-waters have now been traced, must, I fear, remain a mystery. The account which was given to the Pundit is inconsistent with the existing ideas of the geography of the country. It is to the effect that after passing the village of Nák-chu-khá (Na Ptchu of the Abbé Huc), which is on the road between Lhása and the Koko-nur Lake, the river flows in a south-east direction to Chámdo or Tsiamdo, a well-known place on the road from Lhása to Bathang (Pá) and Pekin. Thence it is said to flow south-east and east through Ámdú to China, under the names of Máchu and Konkong. If this statement were reliable it would prove the Nák-chu-khá to be a branch of the famous Yang-tse-Kiang; but after a very careful examination of the whole of the data I possess bearing on the subject, I have come to the conclusion that the evidence in its favour is not sufficiently strong to justify my entering into the subject at length.

It appears on the whole not improbable that the first part of the Pundit's statement may be correct, viz. that the Nák-chu-khá River flows to Tsiamdo; if so, it bears successively the names of La-chu, Lo-chu, and Lanthsang-Kiang, which, according to most modern authorities, is afterwards known as the Camboja or Mekhong River.

If, however, Klaproth's well-known map is to be relied on,* the Nák-chu-khá (whose Mongol equivalent, Khara-úsú, is there given), does not flow to Tsiamdo, but forms the head-waters of the Nou or Lou Kiáng, which we now identify with the Salween River, entering the Indian Ocean at Moulmein.

To show the deficiency of correct data about these subjects, I may note that the map accompanying the French edition of Huc's book shows the Na Ptchu River as flowing west into a large lake, while Tsiamdo is not shown as on a river at all; but on the other hand from Huc's own letterpress we learn that † "Tsiamdo is protected by two rivers, the Dzá-chu and the Om-chu, which, after flowing one to the east and one to the west of the town, unite on the south, and form the Ya-long-Kiang,‡ which traverses from north to south the province of Yunnan and Cochin China, and finally throws itself into the China Sea." On looking at other maps for a further confirmation of Huc's account, I was much surprised at finding that Keith Johnston in his map of China in his 'Handy Royal Atlas' of 1871 places Tsiamdo on the head-waters of the Brahmapútra.

The general features of the ground between Lhása and Bathang, as shown on Klaproth's map, are fairly consistent with the account given by Huc of his journey between those places.

One piece of collateral geography brought back by the Pundit appears to agree so well with Klaproth's map, that it seems desirable to reproduce it.

The Pundit states, "A road passes from the Nák-chu-khá village for six days' journey in a north-eastern, and thirteen days in an eastern direction, through the Ho-*suk* § country to

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* In one important instance at least, viz. the identity of the great river south of Lhása with the Irawaddy, modern geographers entirely disagree with him.

† Page 461, vol. ii.

‡ Huc appears to have made a mistake about the name.

§ In Klaproth's map the *Sok*-chu is shown as a northern tributary of the Nák-chu-khá, falling into the latter river near Rabdan temple. The position in latitude of the Nák-chu-khá River agrees very nearly with the Pundit's estimate as shown on the map accompanying this paper.

Jákának Sumdo, where it crosses the Jháchu[*] River, which is 300 paces across, and which is said to join the Nák-chu-khá River at Tsiamdo; from Jáká the road passes east for ten days through the Kháwá country, and for fourteen days through the Cheki country, where the road crosses a river flowing south, the Di-chu,[†] which is said to be larger than the Brahmapútra River near Lhása, or than the Ganges at Hardwar—it is crossed in boats; after sixteen days in an easterly direction, another large river flowing south is crossed, also called the Jháchu;[‡] twenty days' journey more in a south-east direction, passing by Changthang, brings the traveller to the Amdo country to a place called Chering Chitshum on the banks of the Máchú River, which afterwards flows to China."

It is this Máchú River which the Pundit believes, erroneously I think, to be the same as the Nák-chu-khá.

The Pundit took the same route along the northern shore of the Námcho Lake which was followed by his predecessor in 1872, and was described by Lieut.-Col. Montgomerie in the survey reports for 1873–4.[§] From the east end of the lake towards Lhása the routes are identical down to the village of Dam. From Dam, Nain Singh followed the river of the same name in a south-west direction, instead of striking across the hills to the south-east, the direct route which was followed by the other Pundit.

It was not till the 12th of November that the Pundit quitted the higher table-lands of Tibet, and, after crossing the Baknak Pass, 17,840 feet above sea-level, descended into the bed of the Tulung, an affluent of the river of Lhása, where for the first time for several months he found himself at the comparatively low elevation of 13,000 feet, from which a steady descent for five short marches brought him to Lhása, at an elevation of 11,910 feet. His pleasure was great on reaching the Tulung valley, where he found cultivated fields replacing pastures, and grain in abundance, vegetables, *chang*,[||] and other luxuries to which he had long been a stranger. Ordinary cattle and donkeys now took the place of yáks as milk-suppliers and beasts of burden. Fowls and pigs were seen for the first time since leaving Ladákh. The more civilised Bodhpas replaced the Changpas, and the Pundit was looking forward to a pleasant stay at Lhása.

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[*] In the map the Sá-chu, afterwards the Tsa-chu, joins the Om-chu River at Tsiamdo.

[†] The Dza-chu of Klaproth's map, afterwards the Má-chu, afterwards the Yaloung, and the Ta-tchung, one of the largest tributaries of the Yang-tse-Kiang.

[‡] Called by Klaproth the Bri-chu, the veritable Yang-tse-Kiang. This river where crossed higher up by Huc on his journey to Lhása was called Mou-roui-úsú or "tortuous waters." Its Mongol name being Bri-chu and its Tibetan name *Polei-chu* or *River of the Lord;* lower down in its course it is also known as the *Kin-cha-kiang* or *River with the golden sand;* still lower in the province of Sze-chuen it is the well-known *Yang-tse-Kiang* or *Blue River*. It is also known in China as the *Ta-kiang* or *Great River*. It was in this Mou-roui-úsú that Huc found a herd of 50 yaks frozen hard in the ice. After a course of more than 3000 miles, during which it receives two tributaries from the north, each more than 1000 miles in length, it falls into the Yellow Sea.

[§] Also in 'Journal Royal Geographical Society,' vol. xlv., 1875.

[||] A kind of beer brewed from barley.

But unfortunately for him the approach of civilisation brought him considerable anxiety. On nearing Lhása he heard a report that it was currently stated there that an English agent was on his way there from India, and that a *boná fide* Chinaman who had recently arrived from India *viâ* Nepál had been arrested and kept in confinement until an interview with the Chinese Ambán had enabled him to prove that he was not the man they were in search of.

The Pundit, on hearing this, halted a day at Lang-dong, and sent one of his own servants (Nendak, a native of Lhása) on ahead to engage a room in a traveller's serai, and to inquire whether any news had been received of the caravan from Leh. The man returned and reported that nothing had been heard of it; the following day (the 18th of November) the Pundit entered Lhása.

Lhása to Tawang.

On the occasion of the Pundit's first visit to Lhása he remained there three months, and wrote a good description of the place. His present hasty visit of two days only has not added to our existing store of information. He left it on the 20th of November, accompanied by his two servants. Prior to starting, he collected the most bulky and least valuable articles of his property, tied them up in an old blanket, carefully sealed the parcel, and handed it over to the owner of his lodging-house, whom he informed that he was going on a pilgrimage to a monastery ten days' journey to the north of Lhása, whence he expected to be back in about a month to reclaim his goods. He started accordingly in the afternoon in a northerly direction, but as soon as evening came on he wheeled round and commenced his return journey to Hindústán.

The first night he halted at Kumbu Thang, only 2 miles out of Lhása; the following day he reached Dhejen, a flourishing town with a large monastery on the left bank of the Lhása River. His route for the first stage was along the high-road to Pekin.

From Lhása to Pekin there are two roads; the one generally used, and which is believed to be open all the year round, goes at first nearly due east from Lhása to Tsiamdo, the capital of the Khan country; it then takes a southerly direction and passes through Pá or Bathang and the Chinese province of Sze-chuen, crossing *en route* numerous snow-covered passes across the ranges which divide the streams which rise in Tibet and flow southwards either into the sea or into the great Kin-sha-Kiang, afterwards the Yang-tse-Kiang. From Lhása to Pekin by this route is 136 caravan marches, and the distance about 2500 miles.

The other or northern route, which is generally preferred by travellers in the hot season, is probably easier, and there is much less snow encountered *en route.* It goes by Nák-chu-khá, and crosses the head-waters of the Yang-tse-Kiang, from which there are two alternative roads to the Koko Nur. Thence the road passes by Sining-fu (Ziling) to Pekin. It was followed by the Abbé Huc in his journey to Lhása, and he was fifteen days in reaching Lhása from Na Ptchu (Nák-chu-khá). Another account gives us Nák-chu-khá as sixteen days' march from Lhása, each march averaging probably about 23 miles. The same itinerary * gives thirty-four marches of similar length from Nák-chu-khá to Lake Koko-nur, whose position is now known with tolerable accuracy, as it has been recently visited by a Russian officer, Captain Prejevalski.

At Dhejen the Pundit quitted the Pekin road, and turning south crossed by the Gokhar Pass (16,620 feet), the range that separates the Lhása River from the Brahmapútra. The pass was covered with fresh snow. From it he obtained a very extensive view, embracing the Yalá Shimbo snowy peaks 60 miles south-east, and the Ninjinthanglá peaks at a still greater distance on the north-west.

On the 27th of November he reached the Sama-yé monastery, which lies on the right bank of a small tributary of the Brahmapútra about 2 miles before it falls into the great river.

The Sama-yé Gomba is a very ancient, famous, and beautiful monastery, and is said to have been built by the Great Sákyá Múni himself. It is surrounded by a very high circular stone wall, 1½ mile in circumference, with gates facing the four points of the compass. On the top of this wall the Pundit counted 1030 *chhartèns* † made of burnt bricks. One very large *lakhang* or temple occupies the centre of the enclosed space, and is surrounded by four smaller, though still very large, temples, which are placed half-way between the doorways.

The idols and images contained in these temples are many of them of pure gold richly ornamented with valuable clothes and jewels. The candlesticks and other ecclesiastical utensils are nearly all made of gold and silver. The interiors of the (stone) walls of these temples were covered with very beautiful writing in enormous Hindí (Sanscrit) characters, which the Pundit was able to decipher, although he could not understand their meaning. They are supposed to be the handwriting of Sákyá Múni himself, and are objects of worship to all visitors to the monastery.

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* By M. Uspenski; originally published in the 'Investigia.'

† See note on page 90.

This monastery also contains the *Tanguir* and the *Kanguir*, or sacred books of Buddha. The latter are 108 in number.

Tradition says that in the reign of Tajung Dundjak,[*] the Gyalpo of Lhása, the country was without religion and without gods. During his reign Sákyá Múni was born in Hindustán, and came to Tibet, and amongst his early converts were Gyálpo Sumzen, the son, and Biru the grandson, of Tajung Dundjak. These two, in company with Sákyá Múni, commenced to build the monastery at Samá-ye; but whatever was raised by day was thrown down by evil spirits at night. At last Sákyá bethought him of summoning from Hindustán one of his spiritual pupils, Labban Padmi, who was very skilful in the management of evil spirits. He came and was presented to the Gyálpo, to whom, however, he refused to pay any marks of respect. The Gyálpo, somewhat angered, remonstrated with him, whereupon fire issued from Labban's nails and burned the Gyálpo's head-dress. The wicked demons were soon overcome and the monastery was completed. On the decease of the Gyálpo, his son Biru abdicated, and went to Hindustán as a religious mendicant, resigning his authority to Sákyá Múni, who is still supposed to be alive in the person of the Gewa Ring-boché, or Grand Láma of Lhása.[†]

From Samá-ye the Pundit travelled down the course of the Brahmapútra for two marches, passing several small tributaries *en route*. He crossed the great river in a boat on the 30th of November. In this portion of its course it is known either as "Tsanpo" or "the river," or by the name of Támjun Khá. At this, now the lowest known part of the course of the Brahmapútra in Great Tibet, the Pundit estimates the width of the river at 500 yards. The stream was very sluggish, its current near the banks being no more than two-thirds of a mile per hour.* Its depth was nowhere more that 20 feet.†

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[*] The son of Gyálpo Ramba, who was the son of Gyálpo Ghojá.

[†] The term "Delai Láma," by which the Grand Láma of Lhása has always been known to us, from the writings of Turner, Huc, and others, is curiously enough absolutely unknown to the Pundit. Gewa Ring-boché, Galdan Phutong, Kuinggon Ring-boché, are the sole names by which, according to the Pundit, the Grand Láma is known in Tibet. Similarly the great Láma of Shigátzé is known to the Pundit as Panchhen (or Panjen) Ring-boché instead of Teshu Lámba, the name by which he is more familiarly known to us.

The valley through which the river flows was here several miles across; on the left bank of the stream was a stretch of sand fully 1½ mile in breadth, the whole of which is said to be under water in the months of May, June, and July, during which season the river is much flooded, both on account of the increase of water from the then rapidly melting snows, as well as from the rain which falls in considerable quantities from April to June. The river is here no longer used for irrigation, as above Shigátzé, but all the smaller streams which issue from the mountains on the north and south are thickly bordered with cultivated land.

The Pundit left the river near Chetáng, from which point he states that its general course is visible due east for a distance of 30 miles, after which it encounters a range of mountains which causes it to diverge in a south-easterly direction. By taking bearings to, and fixing the positions of, some peaks, on this side of which the river was said to flow, he defined the course of the river approximately for a very considerable distance below where he quitted it. The course of the river thus determined is very fairly accordant with that shown on Du Halde's map of Tibet. After leaving Gyála, the approximate position of which is about 130 miles below Chetáng, the river is said to flow for fifteen days' journey through the rice-producing country of Lho-khálo, reputed to be under a ruler who is quite independent of the Lhása authorities. Its inhabitants are said to carry on trade with the people of the Kombo district, which lies between it and Lhása, but they have no communication with the people on their south, the Shiár Lhóba, a wild race (probably the people who are known to us as the Mishmis) who inhabit the country through which the great river flows to Gyá (Assam). In the Lho-khálo country the Brahmapútra is said to be joined by two large rivers from the north.

The Pundit has thus been able to throw a little more light on the lower course of the Tsanpo or the Great River of Tibet. It is unnecessary to follow Wilcox, Montgomerie, and others, who appear to have clearly proved that the Tsanpo must be the large river which, under the name of Dihong, enters Assam near Sudiya, where it is joined by the Brahma-kúnd. We may, I think, safely admit that this is the case; and although the name

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* The Pundit found that a piece of wood which he threw in from the bank was carried along a distance of 50 yards in two minutes and forty seconds.

† The poles which were exclusively used in punting the boats across were measured by the Pundit, and found to be 24 feet in length: from this he estimates a maximum depth of 18 or 20 feet.

Brahmapútra is doubtless derived from the Brahma-kúnd of the Assam valley, geographers have, in consideration of the wide-known celebrity of the name Brahmapútra, bestowed it on the Tsanpo, the upper and most important source of the great river.

Chetáng is a large town on the right bank of the Yálung, a considerable affluent of the Brahmapútra, on its right bank. It contains two large monasteries, in which reside 700 Lámas. From Chetáng the Pundit's road lay up the Yálung, through a rich and fertile valley, which contains numerous villages and monasteries scattered about on both sides of the stream. The country is very productive, and contains numerous fruit-trees, principally apricots and pears; wheat and barley are abundant, as well as peas, and many other kinds of vegetables. There is good grazing on the mountains which border the valley, but the breed of sheep is very small.

From Chetáng to the Dálátang plain at the head of the valley is 36 miles. In addition to numerous scattered villages of ten or twelve houses each, the large towns of Naitong and Chukyá Phutáng are passed *en route*. From the Dálátang Lá to the Karkang Lá the road traverses for 15 miles a grassy plateau between 15,000 and 16,000 feet above sea-level, through which flows a stream which takes its rise in springs, and ultimately finds its way into the Brahmapútra below Chetáng. On this elevated region, which extends for a considerable distance to the west, the Pundit again found himself amongst the Dogpas or nomad population. It is by the Karkang Pass to the south of the plain that the main Himalayan watershed is crossed. On reaching it the Pundit states that a magnificent view presented itself. The whole of the foreground was occupied by gently undulating grassy plains, over which, on the north-west, at a distance of but a few miles, rise the very conspicuous group of snowy peaks called Yála Shimbo. Other snowy peaks beyond the Brahmapútra appeared topping the plateau to the north, while east and west and south snowy peaks rose in every direction, but at great distances off.

From the watershed, which is 16,210 feet above sea-level, the road to the Kyá Kyá Lá, a pass about 70 miles further south, traverses a high undulating plateau which is bounded on its west by a well marked snowy ridge, which runs nearly due north and south, and contains numerous glaciers. The drainage of this country is most irregular. The Pundit's road for the first 20 miles from the pass followed a stream which, under the name of Sikung Sángpo, flows for 40 miles nearly due east, through the Chahuil country, and ultimately turning south-east, runs nearly parallel to the upper course of the Brahmapútra, which river it is said to join in Assam. After leaving the main stream the road ascends a branch valley for a distance of 20 miles to the Serása Pass (15,300 feet), and thence descends into a stream which flows due south for 40 miles, and subsequently, under the name of Táwáng-chu, takes a westerly course, and flows round the southern extremity of the snowy range which has been mentioned as bounding the plateau on the west.

That portion of the plateau which contains the head-waters of the Sikung River is from 13,000 to 15,000 feet above sea-level. It is a very flourishing, well-cultivated country, covered with numerous small villages containing settled inhabitants, who are under the immediate rule of the Jongpon of Chahuil, a district situate lower down the course of the Sikung River.

The road itself after leaving the Serása Lá goes nearly due south, crossing in succession several spurs from the western range, and after reaching the Kyá Kyá Pass rapidly descends into the Chukhang (Shyu) valley, which is separated from that of the Táwáng by a very high ridge, which is crossed by the Mila Khatong, a pass which was covered with fresh snow.

Between the Sikung district and Chona Jong, the summer residence of the Táwáng Jongpon, the country is uninhabited. Near the Serása Pass the Pundit passed a lake about 6 miles long by 4 broad, entirely frozen over, but the waters of which in the summer months doubtless help to feed the Táwáng stream. South of this lake the road followed by the Pundit is joined by another which comes from the Hor country and Shigátzé.

Chona Jong is a place of considerable importance, and is a great exchange mart where salt, wool, and borax from the Hor country; and tea, fine silks, woollen cloths, leathern boots, and ponies from Lhása, are exchanged for rice, spices, dyes, fruits, and coarse cloths * from Assam. Of these articles rice is a monopoly of the Lhása Government, and at Chona Jong there is a *De-Rang* (or rice-house) in charge of a Lhása official, the *De-Rang-pa,* who purchases the whole of the rice that is imported from Assam, and at whose warehouses only can rice be purchased either wholesale or retail.

This market must be one of considerable importance, and contains 300 or 400 shops. The Pundit is of opinion that although the import and export trade is not nearly so valuable as that of Leh (the great exchange mart for India and Eastern Turkistán), yet that the number of traders and animals and men employed in carrying loads is somewhat larger. The merchants who import the articles from Assam are mostly natives of Táwáng, who are called Monhpas; but the goods imported from Hor are brought in by the Dogpas or Changpas. The goods from Lhása are brought by merchants from that place.

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* A kind of silk, according to the Pundit, termed *endi* in Assam and *bhu-re* in Lhása. The Chinese silk is called in Lhása *go-chen*, or *warm cloth.*

There is free trade (with the exception of the rice monopoly before mentioned) between Hor, Lhása, and Chona Jong; but on all goods to and from the south a duty of 10 per cent. is levied at the *Chukhang* or custom-house, one long day's march to the south of Chona Jong. Arrangements are made by the collector of taxes that merchants shall not have to pay both ways. The taxes go to the Jongpon, and are remitted by him to Lhása.

The road from Chona Jong to Táwáng Chukhang is closed by snow from January to May or June. An alternative road lies down the Lhobra and up the Táwáng rivers.

This Chukhang is not only a customs boundary, but separates the Bodhpa country on the north from the Mon-huil district to the south. The Monhpas who inhabit the Táwâng district differ materially in language, dress, manners, and appearance from the inhabitants of Tibet, and resemble, according to the Pundit, in many respects the Dhukpas of the Bhotán country on the west. Instead of allowing their hair to grow behind, and arranging it in plaits as is done in Tibet, they cut it to an even length all round the head. On the top of it they wear a small skull-cap made either of woollen cloth or felt. Instead of the long gown of Tibet, a short coat is worn, which only reaches to the knee. It is fastened by a woollen girdle, in which is invariably fastened a long straight knife.

With the exception of a very large and important monastery at Táwáng, the whole of the villages in the Táwáng valley are under the jurisdiction of the Jongpon of Chona Jong.

This Táwáng monastery is entirely independent of the Jongpon and of the Lhása Government. It contains 600 Lámas, and although not owning much land in the immediate vicinity of the monastery, they are (with the single exception of the village of Singi Jong, which is a *jagir* of the Chona Jongpon) the proprietors and rulers of the whole country to the south of the range of hills which separates the Táwáng from the Dhirang valley; their territory extends right up to the British frontier near Odálguri, which latter place is said, prior to its occupation by the British, to have formed a portion of the Táwáng *jagir*, which now includes the Dhirang and Phutung valleys.

The affairs of the Táwáng district are managed by a sort of parliament termed *Kato*, which assembles in public to manage business and to administer justice. The *Kato* is composed entirely of Lámas, the chief officials of the principal monastery. These comprise—

1st. The *Kanbu*, whose duty it is to punish and maintain discipline amongst the Lámas.

2nd. The *Lab-ban*, or teacher, who is at the head of the educational establishment.

3rd. The *Gelongs*, four or five in number, who look after the revenues and government of the country.

4th. The *Nerbas* or *Nerpas*, also four or five in number; these assist the Gelongs in their various duties.

The whole of these, together with a few of the older Lámas, form the parliament and have the supreme direction of affairs. Claimants attending their court present their petitions folded up in *khataks*, or silk scarves, and prostrate themselves with great reverence.

These Táwáng Lámas are an independent lot, and are well armed with guns, bows and arrows, &c. In Dhirang and other places they keep a regular armed force of Lámas to enable them to cope not only with the independent *Daphla*, *Duffla*, or *Lhoba* tribes who inhabit the lower course of the Dhirang valley, and with whom they have frequent feuds; but also with the neighbouring and more powerful country of Bhotán on the west, the various districts of which, when not (as is generally the case) engaged in internal hostilities, are always ready to pick a quarrel with the people of Táwáng. The village of Lih, in the valley above Dhirang, appears to owe a double allegiance to both Lámas and Daphlas. The Pundit on his march down the valley was overtaken by a party of fifteen or sixteen of these Lhobas, who were carrying away from Lih some cattle, sheep, and pigs which they had received as their share of the tribute, and which they were taking off to their own country two days' journey to the east of Dhirang. The Pundit was much struck with the appearance of these men, and especially noticed the enormous development of their arms and the calves of their legs, which far exceeded in size any he had seen elsewhere. They wore cylindrical-shaped hats made of bamboos; their only garment was a long blanket folded somewhat after the fashion of a Scotch plaid, and fastened round the waist by a cloth girdle, which is used as a quiver for their arrows, which all carry, as well as a bow slung over the left shoulder. The greater part of their arms and legs were bare. They wore no boots, but ornamental rings made of rope were fastened very tightly both on their wrists and on their legs below the knee.* They had high cheek-bones and Chinese-looking eyes; wore no hair on their faces, but allowed that on the head to grow to a great length; this was drawn together behind and then allowed to hang down.

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* The people of Táwáng have it that the wearing of the rope-rings is a punishment inflicted by Sákyá Múni upon the Lhobas on account of their irreligion.

The Pundit reached Táwáng on the 24th of December, and was detained there till the 17th of February, having been unable to get permission to proceed to the south. It appears that some few years ago the Táwáng Lámas had represented to the Lhása officials that their subjects suffered much in pocket from the Lhása merchants being allowed to trade direct with Assam, and they at last succeeded in getting an order from Lhása that traders from that place should not be permitted to proceed beyond the limit of the Chona Jongpon's jurisdiction. The Táwángpas have thus succeeded in keeping in their own hands nearly the whole of the trade with Assam, and they systematically prevent all strangers from passing through their country.

Leaving Táwáng on the 17th of February, the Pundit reached Odálguri in British territory on the 1st of March, the road being often deep in snow, while four passes had to be crossed *en route;* of these the passage of the Sai Lá and the Menda Lá were somewhat difficult on account of snow. Details of the road are given in the Pundit's itinerary at the end of the Paper.

At Odálguri the Pundit put himself in communication with the Assistant Commissioner of the Darrang district, who kindly made all the necessary arrangements for forwarding him to Gauháti, whence he went by steamer to Calcutta, which place he reached on the 11th of March, 1875.

Before closing this Paper it may be well to recapitulate the chief results of the Pundit's last exploration.

In addition to the general information acquired, which has been communicated in the narrative, the Pundit has made a very careful and well-executed route survey of the whole line of country traversed, viz. 1013 miles from Lukong (west end of Pangong Lake) to Lhása, and 306 miles from Lhása to Odálguri. Of this total distance of 1319 miles, throughout which his pacings and bearings were carefully recorded, about 1200 miles lie through country which has never previously been explored. Numerous lakes, some of enormous size, and some rivers, have been discovered; the existence of a vast snowy range lying parallel to and north of the Brahmapútra River has been clearly demonstrated, and the positions of several of its peaks have been laid down, and their heights approximately determined.

The Brahmapútra has been followed for a distance of 30 miles in a portion of its course, 50 miles lower down than the lowest point previously determined; and as its approximate direction for another 100 miles has been laid down, the absolutely unknown portion of that mighty river's course now remaining has been very materially reduced. The route between Lhása and Assam *viâ* Táwáng, of which next to nothing had hitherto been known, has been carefully surveyed, and the daily marches described.

As a framework for the map, no less than 276 double altitudes of the sun and stars have been observed with a sextant for the determination of latitude, and the close accordance of the results *inter se* and with the mapping of the route by the pacings and bearings prove incontestably the general accuracy of the work.

The temperature of boiling water has been observed on nearly every pass and at nearly every camping-ground (497 observations in all), adding materially to our knowledge of the physical conformation of the region.

Frequent observations of the temperature of the air and the direction of the wind have given us some further addition to the knowledge of the Tibetan climate.

The Pundit suffered much in health during the latter portion of the journey, and his eyesight has become seriously injured from exposure and hard work in most trying climates throughout a long series of years. He is now anxious to retire from active work, and will probably receive a grant of land in his native country; and thus, having happily survived the perils and dangers of the road, it is hoped he may spend the declining years of his life in comfort, and with a due appreciation of the liberality of the British Government.

THE PUNDIT'S ITINERARY.*

FROM LEH TO NOH.—*Distance* 173 *miles.*

1. *Tikshe,* 10 *miles.*—Good road up the Indus valley. The village of Tikshe contains about 600 inhabitants.

2. *Chimray* (*height* 11,890 *feet*), 15 *miles.*—Up the Indus valley for 10 miles; road indifferent; after leaving the Indus the road goes up a well-cultivated branch valley to the north, to Chimray; a village with about 500 inhabitants. Bad camping-ground.

3. *Zingrál* (*height* 15,780 *feet*), 8 *miles.*—Up the valley for about 3 miles, until it forks; road then passes for 1½ mile up the eastward branch to the village of Sakti; beyond this the ascent to Zingrál is steep; no village; good camping-ground.

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* The description of the first eight days' marches, *i.e.*, as far as Chágra, are taken from the routes published in the appendix to the Geographical Chapter in the volume of reports on Sir Douglas Forsyth's Mission to Yárkand and Káshghar, 373–74.

At Zingrál two roads separate, one going over the Chang Lá and the other over the Kay Lá; the road to Tánksé by the latter route is shorter by 6 miles than by the former, but it is more difficult for laden animals.

4. *Tsultak (height* 15,950 *feet),* 8 *miles.*—Up the most northerly of the two valleys. An easy but stony ascent of 2 miles to the top of the Chang Lá Pass (17,600 feet). A very gradual descent of 4 miles, after which the road turns abruptly to the east. At Tsultak is a small lake; no village; good camping-ground. Though the road over the pass is not very steep, it is difficult for loaded animals on account of the badness of the road, which is a mere track, winding through rocks and boulders.

5. *Tankse (height* 12,900 *feet),* 14 *miles.*—Down a valley for 6½ miles of easy road; across the shoulder of a hill (into a valley which drains into the Shyok River) to Dúrga, a small village in the Tánksé valley; ascend the valley to the large village of Tánksé; the residence of the headman of the district of the same name; supplies of all sorts procurable. Behind the village is a valley up which runs the road to the Kay Lá.

6. *Chakar-taláb,* 14 *miles.*—Valley above Tánské narrows for 6 miles, and then turns to the south and opens out; 2 miles further on is Muglib, a very small village; for 3 miles the bottom of the valley is a grassy swamp, then narrows for 2 miles of gentle ascent among rocky boulders. At Chakar-taláb is a small pond, sometimes dry in summer; coarse grass on farther side of it.

7. *Lukong (height* 14,130 *feet),* 7¼ *miles.*—Five miles up valley to north-west end of Pangong Lake; water salt; 2 miles due north from end of the lake to Lukong, where is a small patch of cultivation with a stream running into the lake.

8. *Chágra (height* 15,090 *feet),* 8 *miles.*—A summer pasture-ground of Tartars; one or two stone huts; grass plentiful, and fish in the stream.

9. *Churkong,* 6 *miles.*—A ruined rest-house at foot of the Lankar or Marsimik Lá; road good up-stream all the way; grass and búrtsi at camp.

10. *Pangúr Gongma (height* 17,670 *feet),* 9 *miles.*—The road crosses the range (which separates the Lake Lukong drainage from that of the Chang Chenmo River) by the Marsimik Pass (18,420 feet), and instead of following the Yárkand route to the Chang Chenmo valley, the road passes over elevated ground to the east of the pass into the head of another valley which drains into the Pangong Lake; the road then crosses by the Kiu Lá, a high spur from the main range, and descends to camp. There was snow in July lying on the surrounding hills, but none on the pass itself.

11. *Ningri or Rongnak* (*height* 16,250 *feet*), 5 *miles.*—Road follows down a large stream which flows to Pangong Lake, and in summer is difficult to cross; grass and búrtsi at camp.

12. *Niágzu or Rawang Yokma* (*height* 15,390 *feet*), 8 *miles.*—Road passes for 8 miles down-stream to Mandal, and then turns up a branch valley (Tsokiok) containing abundance of grass and jungle wood. The camp is at the junction of three streams, and is on the frontier between Ladákh and Tibet.

13. *Kaisarpo* (*height* 16,000 *feet*), 12 *miles.*—Good road along Tsokiok stream. Three tents of Noh shepherds at camp.

14. *Gonu,* 6 *miles.*—Road continues up valley, near the head of which two passes (17,300 feet and 17,700 feet high respectively) have to be crossed: a frontier guard stationed here.

15. *Chuzan* (*height* 15,840 *feet*), 11 *miles.*—Road down valley, which opens into a grassy plain. Several springs near camp, from which a plentiful supply of good drinking-water is obtained.

16. *Pal,* 15 *miles.*—Road down valley. Several springs near camp. *Pal* is on the northern bank of the Pangong Lake, the water of which is brackish.

17. *Dobo Nákpo* (*height* 14,020 *feet*), 8 *miles.*—Road skirts the northern edge of two small lakes, the Cho Rum and the Cho Nyák, the water from which flows westward into the Pangong Lake through a deep channel not more than 20 paces wide. The water in these lakes is quite fresh, and is used for drinking.

18. *Gangra* (*height* 13,970 *feet*), 13 *miles.*—Good road over a flat plain, passing about 1½ mile to the north of the lake, which is here called Rudokh Cho. At 9 miles passes the village of Noh, containing about 15 houses. A stream from the north-east, 40 paces wide and 3 feet deep, here joins the Pangong Lake. Up this stream is a road to Khotan *viâ* Polú and Kiria; camp beyond the river; abundance of grass. Yaks' dung in great quantities used as fuel; opposite Gangra a stream flows into the Pangong Lake from Rudokh.

NOH TO THOK DAURAKPA.—*Distance* 377 *miles.*

19. *Zinga* (*height* 13,960 *feet*), 11 *miles.*—At 4½ miles from Gangra is the termination of the series of lakes known to us as Pangong, and to the natives of the country as
Cho Mo Gna Laring Cho,
Lake woman narrow very long Lake,
} a small stream 8 paces broad and 1½ foot deep enters it at the east end. From this point to Zinga the road passes along a broad and nearly level plain about 6 miles in width, and bounded on north and south by grass-covered mountains. At camp were four tents of shepherds.

20. *Khai Chaka* (*height* 13,960 *feet*), 6 *miles.*—Road continues along grassy valley (locally termed Sang) to camp, which is on the north side of a salt-water lake about 7 miles in circumference. Water from springs, and many wild *kiang.* About 5 miles south-east of the lake is another salt lake, the Dakdong Chaka, to the north of which is a very conspicuous black stony mountain called Gyai I,* which the Pundit was informed contains numerous caves, in which are blocks of crystal (Silkár) the size of a man. These are objects of worship to the people of the neighbourhood. From this camp a large open valley extends in an easterly direction as far as the eye can reach.

21. *Lumadodmo* (*height* 14,210 *feet*), 13 *miles.*—Road good and over level plain. To the south several small salt-lakes are passed. Dung of cattle (*chio*) used for fuel here and throughout the rest of the journey to Lhása, except where otherwise specified. There are warm springs in the neighbourhood, said to possess medicinal properties, which are frequented in winter by the surrounding population.

22. *Bujúng* (*height* 14,290 *feet*), 14 *miles.*—Road continues along a level grassy valley, varying from 6 to 10 miles in width, and bounded on the north and south by grassy hills. Camp on north edge of a fresh-water lake about 10 miles in circumference, and tenanted by numerous wild-fowl. The banks of the lake are covered with shells. A stream enters the east end, and there is one outlet at the opposite end of the lake through which a stream passes to the salt-water lake on the west. A view of the Alung Gangri peaks was obtained from here.

23. *Chabuk Zinga* (*height* 14,400 *feet*), 16 *miles.*—Road continues along course of stream, which still runs in a broad open valley; at camp two small huts and four or five tents. Two miles to the north-west was another encampment of fifteen tents.

24. *Kangni Chumik* (*height* 15,300 *feet*), 14 *miles.*—At 3½ miles a road goes off in a south-east direction to Tingche and Thok Jálung. No fresh water on this march or at camp, which was in the neighbourhood of an extensive salt-marsh. North of the camp are some bare red-coloured mountains, and the water and mud of the marsh was of the same colour, as also is the salt which is extracted therefrom. Another view of the Alung Gangri peaks was obtained from here.

25. *Mindum Cháka* (*height* 14,860 *feet*), 20 *miles.*—Road as usual.

26. *Mindum Cháka. East end*, 7 *miles.*

27. *Thachap Cho* (*height* 15,130 *feet*), 14 *miles.*—Came across fresh water about half-way to camp. The plain along which

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* Gyai I = country of snow.

the road lies was covered with numerous large herds of kiang and antelope, which exhibited but little fear. Thachap Cho is a fresh-water lake, and into it flows a large stream, which comes from a mass of snow-covered hills lying to the north-east of the lake. This stream is bordered on both sides by an extensive jungle, containing willow, tamarisk, and other trees and shrubs. Many wild flowers seen in full bloom.

28. *Thachap.—River-bank*, 10½ *miles.*—Road along bank of river, the water of which occasionally disappears underground and reappears lower down. This stream flows in a south-east direction.

29. *Chumik* (*height* 14,690 *feet*), 12 *miles.* — Several small lakes to east of road; east of the camp is a very extensive plain, extending as far as the eye can reach. Good water at camp from springs. Fuel from dung of wild horses.

30. *Chodol Sangpo* (*height* 14,550 *feet*), 11½ *miles.*—Camp on stream 24 paces wide and 2 feet deep, with sluggish current. Near it is the Purang Cháka salt-lake, where the Pundit observed quantities of borax, which is locally termed "bul."

31. *Purang Cháka* (*height* 14,270 *feet*), 13 *miles.*—Camp on north edge of lake; wood plentiful; grass scarce.

32. *Purang Cháka, 2nd camp*, 6 *miles.*—Camp at springs surrounded on all sides by "bul,"* which lies in beds from 2 to 8 or 10 feet in depth, and which, being of a light, loose consistency, gives way under the weight of man or beast.

32*a*. *Pang Bhup* (*height* 15,030 *feet*), 13 *miles.*—No water on road, but abundance of grass. Springs at camp and Tibetian *Mánis;* it is a favourite camping-ground of the nomads in the cold weather, but was uninhabited at the period of the Pundit's visit. A large plain extends eastwards from this camping-ground. Several snowy peaks visible towards the north.

33. *Hissik Cháka* (*height* 14,310 *feet*), 12 *miles.*—Small salt-lake; road as usual over level ground.

34. *Hissik Cháka 2nd*, 7 *miles.*

35. *Nimcho Cháka* (*height* 14,000 *feet*), 17 *miles.*—No drinking-water on road, but many fresh-water springs, and abundance of fire-wood near camp; road perfectly level.

36. *Nimcho Cháka*, 5 *miles.* — Fuel, grass, and water in abundance; south of camp a snowy range is visible running east and west.

37. *Huma Cho*† (*height* 14,270 *feet*), 12 *miles.* — Several Buddhist Mánis, and two large fresh-water lakes; no mountains visible on the north, but an extensive level grassy plain studded with wild animals, extending as far as the eye could reach.

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* In Kashmir called "Puli." It is a kind of borax.

† *i.e.*, Milky Lake.

38. *Yugár* (*height* 14,460 *feet*), 16 *miles.*—Grass, fuel, and water from a tank which is supplied by rain-water only. This tank dries up at certain times of the year.

39. *Mango* (*height* 14,230 *feet*), 8¼ *miles.*—Six tents of Garché Khámpas; grass plentiful; cow-dung for fuel; water from a small stream.

40. *Noring Cho*, south bank of (*height* 13,750 *feet*), 10¼ *miles.*—Twelve tents of Khámpas; water from springs; grass and fuel plentiful.

41. *Jakár* or *Yakár* (*height* 13,770 *feet*), 8¼ *miles.*—Camp on south bank of the Noring Cho Lake; ten or twelve tents of Khámpas; water from springs; grass and fuel plentiful.

42. *Sakti* (*height* 14,380 *feet*), 10¼ *miles.*—Water from springs; grass and fuel plentiful.

43. *Kezing* or *Phalung Yakdá* (*height* 14,690 *feet*), 5 *miles.*—Water, grass, and fuel; seven or eight Khámpa tents.

44. *Kyáng dhui Chú** (*height* 14,780 *feet*), 10 *miles.*—Small tank; good water; grass and fuel plentiful.

45. *Jom Marú*† (*height* 15,700 *feet*), 11½ *miles.*—A small stream of water at camp; grass and fuel plentiful; an old gold-mine at a distance of 5½ miles.

46. *Tárnguk* (*height* 14,810 *feet*), 13 *miles.*—Pass at 5½ miles, at Thok Amár, an old gold-mine with an area of about one square mile. Camp inhabited during the cold season only; a large salt-lake, called Tong Cho Chäka, lies to the north-east, at a distance of 5 miles. Lofty mountains (black) visible on north, and a very high snowy peak called Shyalchí Káng Jáng, visible towards the south-east; a large plain extends to the east.

47. *Choring Golip* (*height* 14,230 *feet*), 16½ *miles.*—The road is here crossed by another track, which leads from Manasarowar to Nák-chu-khá and the Khám country.

48. *Thok Márshera* (*height* 14,830 *feet*), 18 *miles.*—Cross *en route* the Shyal Chu, a large river which flows in three channels from a mass of snowy peaks called Shyalchí Káng Jáng, about 30 miles south of the road. This river is traversed with great difficulty in the summer months, although nowhere more than a foot deep at the time of the Pundit's visit; it flows into the Tashi Bhup Lake, whose southern shore is about 2 miles north of the road. From the east end of the lake a stream is said to issue towards Nak-chu.‡ The lake is about 13 miles in length by 8 miles in breadth.

49. *Thok Daurákpa* (*height* 15,280 *feet*), 12½ *miles.*—Road somewhat hilly; pass *en route* the deserted mine of Thok Dák-char. The direct road from Shyál Chu passes over a level

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* Literally, *lake dug by the wild horse.* † Literally, *horse's mane.*

‡ The Napt Chu of the Abbé Huc.

plain, but the Pundit took a difficult and circuitous route over the hills, in order to avoid robbers. A long range of red-coloured hills, running east and west, lies to the north of the camp.

Thok Daurákpa is a large gold-field, containing 32 houses and tents of diggers. Changpas belonging to the Nákcháng Pontod Changmá country: grass, fuel, and water scarce.

THOK DAURÁKPA TO SENJÁ JONG.—*Distance* 262 *miles.*

50. *Nále (height* 15,960 *feet),* 10 *miles.*—Road level; water, grass, fuel (búrtsi and dung).

51. *Diokar Karpo* (*height* 16,090 *feet*), 12 *miles.*—Cross a low pass, otherwise the road is level—as usual, passing over an extensive grass-covered plain.

52. *Beda Nákchúk* (*height* 16,330 *feet*), 14 *miles.*—Camp on left bank of Chuzan Sangpo, a small river flowing east.

53. *Lhung Nakdo* (*height* 16,140 *feet*), 10 *miles.*—Passed several Changpa tents *en route.* A high snowy peak, called Mongá Gangri, visible over the plain to the north-east. A large encampment of shepherds (12 tents) and residence of a district official at Gobrang; 2 miles from camp a road is said to go from here to Nák-chu-khá (north of Lhása), a distance of at least 600 miles, over a nearly level plain. The road keeps in the *Sang* of the same stream the whole way.

54. *Ragú* (*height* 15,970 *feet*), 8½ *miles.*—Passed several tents of shepherds; enormous herds of antelope were seen from the road.

55. *Gipu Khárá* (*height* 15,810 *feet*), 16 *miles.*—Passed *en route* the Bogchang stream, 20 paces wide and 1 foot in depth, an affluent of the Chuzán.

56. *Gárá-dong-kung* (*height* 16,560 *feet*), 14½ *miles.*—Camp near the abandoned gold-field of Chigimili. Water, grass, and fuel in abundance.

57. *Náwá Chhidmo* (*height* 15,720 *feet*), 12½ *miles.*—Road ascends with an easy slope for 7 miles to the Kilong Lá (height 18,170 feet), after crossing which it follows a stream which subsequently flows northwards to the Táng Júng Cho. There was no snow on the pass, although much snow was lying on some peaks to the north, which rise to an average height of 20,000 feet,* and which forms a portion of a lofty range which extends in a southerly direction to the west of the Dángra Yum Cho, and culminates in some enormous peaks known as the Tárgot Lhá, from which, again, a snowy range extends eastward for a distance of 180 miles. The positions of many of the principal peaks in this latter range were fixed by the Pundit. The range comes to an end at the Gyákhárma peaks at the east end of the

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* The double altitudes of some of these peaks were measured by the Pundit with his sextant; their height has been roughly determined trigonometrically.

Kyáring Cho. The highest mountain in this eastern group was between 21,000 and 22,000 feet above sea-level, and the Pundit estimates the height of the highest of the Tárgot peaks at about 25,000 feet.

58. *Yomo Zinga* or *Ombo* (*height* 15,240 *feet*), 12½ *miles.*—A large village containing a monastery and 35 houses, surrounded by cultivation. This was the first time the Pundit had seen signs of cultivation since leaving Chabuk Zinga (the 23rd halting-place). Enormous lakes to north and south of the road.

59.—*Thungru* (*height* 14,770 *feet*), 11 *miles.*—Here are the ruins of an old stone fort, said to have belonged centuries ago to the Rájá who at that time ruled over the whole of the Hor country. Road follows the northern shore of the Dángra Yum Cho.

60. *The Chuku Larcha*, 4½ *miles.*—The road ascends for 2 miles to the Naithung Pass (15,710 feet) up a steepish incline; road good.

61. *Mobáding* (*height* 16,160 *feet*), 6 *miles.*—Cross the Chúkú Pass (16,530 feet); ascent 2 miles; descent to plain 1½ mile. Several shepherds' tents scattered about the banks of the Dungche Lake, which is 28 miles long by 10 broad.

62. *Ngorai* (*height* 15,320 *feet*), 12 *miles.*—Five tents of shepherds at camp, and several others passed *en route;* large flocks of sheep scattered over the plain, which extends as flat as a table from the Chúkú Lá (march 61) to the Chapta Páss (68th march), a distance of over 60 miles. Its breadth from north to south, at its widest part, is little less than 30 miles. It is a beautiful pasture watered by numerous streams and fresh-water lakes.

63. *Gyardo* (*height* 15,360 *feet*), 10 *miles.*—A good road goes from here to Shigátzé. The first portion of the road is through the Dóbá country, inhabited by nomads. Between Dóbá and the Che-huil country is a lofty range which is crossed by a high pass, to the north of which is the Hota Sangpo, which flows east and north-east, and was crossed by the Pundit in his march. Beyond the Hota Sangpo is the Che country, which contains many villages, and where much barley and wheat are grown.

64. *Tákdong*	(*height* 15,400 *feet*),	13 *miles*	Road passes over level plain and crosses several streams. Many snowy peaks visible from the road.
65. *Jhiaktá*	(„ 15,260 „),	14½ „	
66. *Kátmár*	(„ 15,200 „),	10½ „	
67. *Lomá Karmo*	(„ 15,360 „),	6 „	

68. *Kyá Kyá Rafka* (*height* 14,770 *feet*), 11 *miles.*—Cross *en route* by the Chapta Pass (16,900 feet) a range which separates two streams which flow into the Chikut Cho to the north of the road. Camp at west end of Kyáring Cho. From this lake a river * flows to the Chikut Cho, 111 paces broad and over 3 feet

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* The Pundit sent one of his men across it in order to get its correct dimensions.

deep, but with a slow current; the largest stream hitherto met with on the journey.

69. *Kyáring Cho,* 10 *miles.*—Camp on south edge of lake.

70. *Denák* (*height* 15,480 *feet*), 12 *miles.*—Cross *en route* the Rikú River, flowing from the south in three channels, each branch being about 40 paces in breadth and 1 foot in depth; 15 tents of the Nákchang Dóbá at camp, and a house belonging to the Debon, a high official in Shigátzé.

71. *Ngobo Lé* (*height* 15,330 *feet*), 11½ *miles*—Road lies along the south edge of the Kyáring Cho. Camp on the borders of the lake.

72. *Dojam* (*height* 15,380 *feet*), 11½ *miles.*—Camp near the east end of the Kyáring Lake.

73. *SENJÁ JONG* (*height* 15,550 *feet*), 8½ *miles.*—The first considerable village met with since leaving Tánksé in Ladákh. It contains 80 houses built of bricks and stones, and 100 tents. It is one of the largest places in the Hor province, and is the residence of two Jongpon officials from Lhása. The district is watered by the Dumpho or Hota Sangpo, which flows in three channels, the largest of which was 73 paces broad and 1½ foot deep. There is no cultivation, and the population, like the greater part of Hor, get their supplies of grain from the Shigátzé and Lhása districts to the south. From Senjá Jong roads go to Shigátzé and to Lhasá (direct).

SENJÁ JONG TO LHÁSA.—*Distance* 283 *miles.*

74. *Chupgo*	(*height* 15,680 *feet*),	5 *miles.*	Road passes through the Dobá Shingkun and Yakpá districts belonging to the Shigátzé Government.
75. *Kaisar or Singhyá* (	15,790 „),	7¼	
76. *Nángongo*	15,720 „),	10½	
77. *Yungchen*	11,790 „)	10¾	The country is level and well watered. The Pundit counted 130 shepherds' tents while passing through this district. No cultivation.
78. *Dhejen*	15,350),	11½	
79. *Kerák*	(„ 15,360 „),	11	Road, as usual, over rich pasture land, with no cultivation; about 100 shepherds' tents passed *en route.* The district is under the Garpon of De-Cherik, a subordinate of the Lhása Government. Water, grass and fuel everywhere plentiful. All the streams passed *en route* flow to lakes in the north.
80. *Bul-chu*	(„ 15,460 „),	14	
81. *Langmá Jung*	(„ 15,240 „),	14½	
82. *Rákyám Dongpá*	(„ 15,340 „),	13¼	

83. *Thuigo Chumik (height* 15,440 *feet),* 16 *miles.*—At 4 miles cross the Nak Chú River, which flows westward from the Námcho Lake into another large lake north of Lángma Jung, from which it is said to issue and flow north to the Nák Chú Khá* River. The bed of the Nák Chú River, where crossed by the Pundit, was 100 paces wide and of great depth; but the actual stream was not more than enough to turn one mill. In the summer months the river-bed is said to be filled with a violent torrent. Camp on the northern edge of the Námcho or Tengri Nur Lake.

81.	*Jádor Gomba*	(*height* 15,400 *feet*),	7 *miles.*	Two large monasteries near the banks of the Namcho Lake.
85.	*Arkú Bagú*	(„ 15,130 „)	9 „	Road and camps on north edge of Namcho Lake. Pass a few tents of Dogpa shepherds and two small monasteries. Abundance of grass, water, and fuel.
86.	*Dukti*	(„ 15,160 „),	10¾ „	
87.	*Dakmar Chuchún*	(„ 15,580 „),	16½ „	

88. *Bagú Karmo (height* 15,710 *feet),* 16½ *miles.*—At 8 miles crossed the Nya Chú, a small river that flows west into the Námcho Lake; several snowy peaks visible about 25 miles to the east of the road.

89 *Goblung Yokmá (height* 14,510 *feet),* 10 *miles.*—At 2½ miles cross the Dam Lhargan (or Niárgan) Pass (16,900 feet) by an easy road, which, however, for a mile lay through freshly-fallen snow about 1 foot in depth.

90. *Kiáng lung* (14,320 *feet),* 4¾ *miles.*—Road passes through the Dam plain, which is scattered over with houses in twos and threes; excellent pastures supply grazing for numerous herds of yáks. Through a gap in the hills to the east of this plain lies a road which joins at Phendo Chaksam (6 marches from Lhása) the caravan route from Lhása to Pekin *viâ* Taklung (Talung), and Nák-chu-khá. From Dam there is a more direct road to Lhása *viâ* Taklung than the one followed by the Pundit.

91. *Chinbo (height* 14,340), 10¾ *miles.*—Road lies parallel to the Dam River. At Chinbo this river changes the direction of its course and flows through a gap in the hills to the south-east of Chinbo; through the same gap runs a direct road to Lhása.

92. *Camp on bank of Lháchu River,* 8¾ *miles*—Road passes up the Nindung valley, through which flows the Lháchu, a river which flows by a circuitous course to Lhása. There are several

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* *Nák* is the Tibetan word for *black*; *khá*, mouth.

scattered hamlets in the Lháchu valley, which is bounded on the north by the Ninjinthánglá snowy mountains, at the southern foot of which is a thick belt of low forest.

93. *Jung Chu* (*height* 14,240 *feet*), 10 *miles.*—Camp near the head of the Lháchu valley.

94. *Jyúlung* (*height* 14,700 *feet*), 6 *miles.*—Road lies up a tributary of the Lháchu. Pass *en route* the small village of Báknák.

95. *Yulo-Gongma* (*height* 14,800 *feet*), 8¾ *miles.*—Between 4 and 5 miles of ascent to the Báknák Pass (17,840 feet). The last part very steep; road good, and no snow on the pass; rapid descent to camp.

96. *Tulung Dingá* (*height* 13,020 *feet*), 7 *miles.*—Steady descent down-stream to the village of Dingá, containing a monastery and 20 houses. Cultivation met here for the first time since leaving Ombo (58th march from Leh).

97. *Yungjuk Village* (*height* 12,630 *feet*), 9½ *miles.*—Pass *en route* the town of Dhejen Jong, the residence of a Jongpon. The direct road to Lhása from Senga Jong, in the Hor country, passes through Dhejen.

98. *Nai Village* (*height* 12,510 *feet*), 8 *miles.*—Road passes through a well-cultivated and thickly-inhabited country.

99. *Saibu Village*, 6 *miles.*—Pass several small villages *en route.* Between Nai and Saibu a stream enters the Tulung valley from the west, a long day's journey up which lies the large monastery of Tulung Chúrbu (or Chubuk) containing 200 Lámas.

100. *Língdong Village* (*height* 12,100 *feet*), 6 *miles.*—Pass several hamlets and the monastery of Kimulung, which contains about 100 Lámas, all from the Nari Khorsum district of Western Tibet.

101. *LHASÁ* (*height* 11,910 *feet*), 14 *miles.*

TOTAL DISTANCE, LEH to LHÁSA, 1095 miles.

LHÁSA to TÁWÁNG.—*Distance* 213 *miles.*

1. *Dhejen Jong*, 11 *miles.*—Road lies up the Lhása River (Kíchú Sangpo) and passes *en route* several villages. Dhejen itself contains about 500 houses and a large monastery with 300 Lámas; here is a large fort on high ground outside the town. Dhejen Jong is the first halting-place on the high-road to Pekin.

2. *Chángjú Village* (*height* 13,650 *feet*), 8 *miles.*—Road ascends an affluent of the Kíchú River. The latter part of the road occupied by Dogpas: no cultivation, but abundance of jungle.

3. *Camp on south side of Gokhar Lá*, 10½ *miles.*—Road good,

but ascent 5 miles to the Gokhar Pass (16,620 feet) very steep; descent easy. From the pass, which is on the watershed between the Rivers Kíchú and Brahmapútra, there is a very extensive view embracing the Ninjinthangla peaks (south of the Námcho Lake), and a very conspicuous peak nearly due north, about the same distance off, and the same height as the Ninjinthangla (*i.e.* about 24,000 feet). Other snowy peaks (the Yálá Shimbo) were visible to the south-east.

4. *Samáye Gomba* (*height* 11,430 *feet*), 10½ *miles.*—A very large and ancient monastery, situate about 3 miles to the north of the Támjun Khá or Brahmapútra River. The road is good, but deep in sand, which overlies the whole of the surrounding country.

5. *Dhomdá Village* (*height* 11,350 *feet*), 12¼ *miles.*—Road passes over a sandy plain along the northern bank of the Brahmapútra.

6. *Chetáng City* (*height* 11,480 *feet*), 6½ *miles.*—At Gerpá Dugá, 2 miles from Dhomdá, is a ferry over the Brahmapútra. The river is about 350 yards across, 20 feet in depth, and has a very sluggish current. The road here leaves the main valley, and goes up the branch valley of Yálung. Where the Brahmapútra River was quitted, it trends due east, a direction which it maintains for about 30 miles, after which it turns off to the south-east. Chetáng contains 500 houses and two very large monasteries, which give shelter to 700 Lámas.

7. *Wombá or Ombu Village* (*height* 11,620 *feet*), 7½ *miles.*—Road good up the Yálung valley. Several monasteries are passed *en route*, from one of which, Tamtuk Gomba, a road passes up-stream and meets, several marches farther on (at Tángshu), the Pundit's line of march. This alternative road passes through an uninhabited pastoral country.

8. *Chákya Phutáng*, 3¼ *miles.*—A large town with a fort, 400 houses, and a large monastery (Tákché). Up to this point from Lhása the road is first-rate.

9. *Písa Dokpo* (*height* 11,890 *feet*), 9 *miles.*—Road still up the Yálung valley. Numerous villages and monasteries passed *en route.*

10. *Karmá Lhákhang* (*height* 13,190 *feet*), 10½ *miles.*—Up the Yálung valley. Several small villages passed *en route.*

11. *Dálátang* (*height* 16,020 *feet*), 6 *miles.*—A large rest-house, with good accommodation for travellers, on the plain which forms the watershed between the Yálung and a more eastern tributary of the Brahmapútra. This plain was covered with cattle, although the cold was very severe. High snowy peaks to the north and south-west of the camp.

12. *Karkang Village* (*height* 15,200 *feet*), 9½ *miles.*—A small village on a highly-elevated plain, which is said to be covered with snow after January. It was bitterly cold when the Pundit

was there (December), although there was then no snow on the ground.

13. *Lhákchang Village,* 13½ *miles.*—Crossed on this day's march the main watershed by a high but easy pass (the Karkang, 16,210 feet), from which a very commanding view was obtained in a north-east direction.

14. *Yúbi Village (height* 13,120 *feet),* 11¾ *miles.*—Descend the stream from the pass, and eastward camp on the right bank of the Sikung River, which flows through a highly-elevated but thickly-inhabited and well-cultivated plain (the Chá-huil country), and ultimately finds its way to the Dufla country Several conspicuous snowy peaks visible over the Chá-huil plain, between 40 and 50 miles east of camp.

15. *Serása Village (height* 14,220 *feet),* 11¾ *miles.*—Road lies up the Jumbi branch of the Sikung River; road good through scattered villages. Hot springs at camp (temperature 91° Fahrenheit), a few hundred yards above which were other hot springs with a temperature of 170°.

16. *Tang-shá,* 17 *miles.*—After 5 miles' ascent by a good road, traverse for 3 miles an elevated grassy plain, elevation 15,300 feet, where it is said that travellers often perish from cold and snow; descend to the frozen Nárá-Yum Cho, which is 6 miles in length by 4 in breadth. A large *Chukháng* (or Government bungalow) at camp, in charge of watchman from Lhása. Many snowy peaks visible to the west and south-west. At this camp the alternative road (stage 7) from Wombá is met; the road is much used by traders from the Hor country.

17. *Gaibá Village (height* 13,250 *feet),* 15 *miles.*—Road passes over very elevated but tolerably level plain, covered with fresh snow to a considerable depth.

18. *Chóná Jong Town* 3¾ *miles.*—A strong stone fort, the residence of two Jongpen from Lhása; about 300 houses; numerous hot springs; snow on road.

19. *Mondo Village,* 3¾ *miles.*—Ten houses.

20. *Chyámo Karmo (height* 14,620 *feet),* 5¾ *miles.*—Pass a small lake, from which a river flows in a south-west direction to Bhotán.

21. *Chukháng,* 9 *miles.*—Cross the Kyá Kyá Lá. The journey very laborious on account of the deep snow lying on the ground. Road good. A toll-house at Chukháng, where taxes are levied by the Lhása authorities, 1 in 10 on all exports and imports.

22. *Pang Khang,* 10¾ *miles.*—Cross the Mila Khátong Pass, 14,210 feet, after which cross two spurs. Camp in a forest. The whole of the country south of the Mila Khátong Pass is designated *Mon-huil,* and is inhabited by a race of people whose language differs very considerably from that of Lhása.

23. *Táwáng* (*height* 10,280 *feet*), 3 *miles.*—Road descends to the Táwáng River, the valley of which contains numerous villages, and constitutes the district of the same name. At Táwáng is a large monastery containing 500 Lámas. It is surrounded by a fortified wall.

From Táwáng there are three roads to Hindustán—

1st. The eastern route *viâ* the Sai Pass to Odálguri; this is the route followed by the Pundit.

2nd. The middle route *viâ* the Makto *Cháksám* or Iron Bridge, and the country of Mirastán (belonging to Bhotán).

3rd. The western route down the Táwáng River *viâ* Jáká Sámba* and Tashi Kang. The two last routes emerge at Dewángiri.

TÁWÁNG TO ODÁLGURI.—*Distance* 97 *miles.*

24. *Okar Village*, 4 *miles.*—Road through deep snow the whole way.

25. *Pekhang Village* (*height* 8010 *feet*), 2 *miles.*—A village with about 40 houses and a large monastery.

26. *Jang-huil Sambá* (*height* 6690 *feet*), 3 *miles.*—Cross by timber bridge over the Táwáng River, which is a rapid stream about 40 paces in width and 5 feet in depth.

27. *Pang Kháng Yokma*,† 4 *miles.*—A steep ascent through heavy snow the whole way (February). Pass near the river the large village of Jang-huil (300 houses).

28. *Pang Kháng Lharcha* (*height* 12,830 *feet*), 5¼ *miles.*—Road up slight ascent along a path that had been beaten down through very heavy snow. Thick jungle on both sides of the road.

29. *Pang Kháng Nyungma Dong*, 8 *miles.*—A rest-house near the village and fort of the same name. Two miles of ascent through heavy snow to the Sai Pass (14,260 feet), from which there is said to be a very extensive view; at the time of the Pundit's passage it was unfortunately obscured by clouds. Four miles south of the pass is the village of Singi Jong, belonging to the Choma (or Táwáng) Jongpon. The snow only extended for 1½ mile south of the pass, and its depth was very much less than on the north.

30. *Jyápshang Village* (*height* 3930 *feet*), 11 *miles.*—The road passes down the Dhiráng Valley, near the stream of the same name, which takes its rise in the Sai hills on the north. Several large villages passed *en route*. Nyungmá (60 houses), Lih (100 houses), and Chepjang (100 houses).

31. *Camp north of Menda Pass*, 5 *miles.*—Very steep ascent

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* Jáká Sámba is situated near the junction of the Lhobrá and Táwáng rivers and is the boundary between Táwáng and Bhotán.

† A *pang kháng* is a wooden rest-house.

up the range which separates the Dhiráng from the Phutung valleys. The northern slopes of this range are covered with enormous deodar-trees. Pass *en route* the village of Dhiráng, containing about 250 houses, and a fort or barrack several storeys high, the residence of two Jongpen. About 25 miles down the river from Dhiráng is the boundary of the independent Lhóba or Dáphla * country.

32. *Phutung Sámba* (*height* 6270 *feet*), 8 *miles*.—Four miles of steep ascent through deodar forest to the Menda Lá (9290 feet). Snow was lying about 1 foot deep at the top. Descent to the Phutung River very steep, especially the lower portion near the river; road good. Pass the village of Phutung, containing about 150 houses.

33. *Táklung Jong* (*height* 6940 *feet*), 9 *miles*.—Cross the river by an excellent wooden bridge; ascend for 2½ miles to the Phutung Lá (7040 feet); cross it, and then ascend to Táklung, the summer residence of two Jongpen, who spend the winter months at Khálak Tang, and Amrá (or Ambá) Tála, near the British frontier.

34. *Khalák Tang* (*height* 3000 *feet*), 9 *miles*.—A village of 30 houses. The road ascends for 2 miles to the Chimo Lá (8170 feet), from which is a commanding view of the Assam plains to the south, and from which the Brahmapútra River is said to be visible in clear weather.

35. *Amrá Tála* (*height* 630 *feet*), 14 *miles*.—Road down-stream and through thick jungle the whole way. To the west of the road is the village of Chingmi. The river is crossed no less than fifty-five times on this march by temporary bridges, which are always carried away in the rains and replaced in the cold weather. The road is quite impassable in the rainy season, prior to which the Táwáng residents of Amrá Tála retire to their villages to the north. In the cold season there are about 200 temporary grass-built huts at Amrá Tála, which is at that time a great rendezvous for merchants from Assam and Táwáng.

36. *Odálguri* or *Káriapára*, 15 *miles*.—Road carried along the stream to its junction with the Sangti Chu; the two streams form the Dhansiri River. The Sangti River is crossed by a wooden bridge, near which is the frontier between British and Tibetan territory.

Odálguri (150 *feet*) is in the Darrang district of Assam, and is about 26 miles from Mangaldai, whence Gauháti can be reached by boat in 1½ day.

TOTAL DISTANCE, LHÁSA to ODÁLGURI, 310 miles.

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* Commonly written *Duffla*.

VI.—*Notes on the Duke of York Group, New Britain, and New Ireland.* By Rev. G. Brown.

I arrived at Port Hunter, Duke of York Island, on August 15th, 1875, in the missionary brig *John Wesley*, and left by the same vessel on August 31st, 1876. During the months I resided there we were in constant daily communication with the natives, and by steam-launch and whale-boat made many journeys to New Ireland and New Britain, visiting the people and residing for some time amongst them.

The Expedition, which was placed under my charge, was organised by the Australasian Wesleyan Methodist Missionary Society, for the purpose of establishing a mission in those islands, if found practicable; and for this purpose I was accompanied by eight Fijian and two Samoan native teachers, with their wives and families.

On landing at Port Hunter, a small house was cut and erected by the crew of the mission vessel and the teachers; coals and a few stores were landed, and then the vessel sailed for Sydney, leaving us a small steam-launch and boat for exploring and visiting the adjacent islands. It formed no part of the original plan that the writer should remain on the group, and no suitable provision was made for such purpose; but on arrival in the group it was deemed best for some European to remain with the teachers. Had this been foreseen, some supplies, stores and instruments, of which we often felt the want, would have been taken with us.

Duke of York Island, as it is improperly called on the charts, is really a small group of twelve islands, seven of which are inhabited. Makada, the furthest island to the N.W., lies in 4°·7 S. and about 152° or 153° E. long. I had no chart by me from which to obtain the correct longitude; but a chart was prepared during our residence in the group by Mr. Blohm, and was forwarded by me to the Admiralty. Makada is about 2½ miles in length, and is the highest land in the group. It is separated from the Duke of York Island by a channel or lagoon about a mile and half in width, and averaging from 6 to 17 fathoms in depth. Two small islands, called Maiit, lie off the N.E. entrance to this lagoon, and are only separated from each other and from the two larger islands of Makada and Duke of York by narrow channels. The lagoon thus formed is called Port Ferguson. It is well sheltered and protected from all prevailing winds. There is another entrance to it from the west side, with good channel for ships. The soundings between the reef of Makada Island and the small island of Maiit were from $6\frac{1}{2}$ to 17 fathoms, averaging 11 fathoms in the harbour, and from 14 to 17 fathoms at the west entrance. There is also a good channel, with from 7 to 10 fathoms, between the two small islands called Maiit. Between the S.E. island of Maiit and Duke of York Island the channel is not more than 3 fathoms deep, and very narrow.

The principal island is called Duke of York Island, but the natives have no general name for the whole island, each district having its own peculiar name. The Port Hunter natives have adopted the name Duke of York, but they also restrict it to their own particular district. The island is about 8 miles in length, and about 5 miles in width. A reference to the chart will show that at Waterhouse Cove and at Port Hunter the island is very narrow, and native tradition asserts that there was formerly a channel into Port Ferguson at both these places, and that the high land to the north-west of Waterhouse Cove, and that between it and Port Hunter, were islands like the two now called Maiit, but higher and larger. The tradition is probably correct, as the land on both these isthmuses bears evidence of comparatively recent formation.

At the south end of Duke of York Island there is another large lagoon, called Port Wesley, which is formed by the islands called Mauke, Utuan, Meoko, and Mualim. These lie off the south end of the island in a semicircle, and enclose a fine sheet of water, quite sheltered from all winds, with good anchorage in almost every part of it, and having two safe and easy entrances east and west. The eastern entrance is between Mualim and Meoko; the western one is between Mauke and Duke of York Island. Depth of water in lagoon from 6 to 10 fathoms; sandy bottom.

All the islands have shore or fringing reefs, but these rarely extend for more than 100 yards from the beach; whilst on many parts of the large island the water is quite deep to within a few feet of the cliffs. In Port Hunter the largest vessel might be moored in smooth water so close to the reef that a short plank alone would be necessary to enable any one to pass from the ship to the shore.

The tides are very irregular, and seem to be much affected by the prevailing wind and currents. A change of wind was on some days sufficient to counteract almost entirely the usual ebb of the tide. There is only one tide in the twenty-four hours. The flood tide in the channel between New Ireland and Duke of York sets to the north along the coast of the latter island, and the ebb to the south.

During the whole of the north-west monsoon, or from November to the end of April, the current in the channel sets strongly to the south-east. During some of these months, especially January and February, it was very strong indeed, and the channel between Duke of York Group and New Ireland was covered with trees, which, from the number and size of the barnacles adhering to them, and the quantities of crustacea and fishes in and about them, must have been a long time in the water. The current, I believe, changes during the south-east monsoon, setting north-west in that season, but not running so strongly as during the north-west monsoon.

There are few permanent springs on the large island, but on Makada there are several, one at least of which reaches the sea as a small running stream, and has been long used by whaling-vessels as a watering-station. Water may be found on the beach below high-water mark at several places, but the only appearance of anything like a large spring or small stream on Duke of York Island was observed in exploring the inlet from Port Wesley, which we were not able to follow to its head, nor to describe the course of accurately, from having no compass in the canoe. The inlet seemed to terminate in thick mangrove swamps, with a small stream of fresh water issuing from it at low water. The natives, however, report another stream of good water as issuing on the beach outside the western entrance to Port Wesley. The islands in this group consist of coral limestone, and rise at most parts abruptly from the water in steep perpendicular cliffs. The whole of the islands are densely wooded and very fertile, though the soil is not at all deep.

On New Ireland we visited some of the villages on many different occasions, and examined a line of coast extending from Metlek, near Cape Bougainville, on the east coast, to a point to the north of Cape Gerry, on the west coast. This is about 130 miles of coast-line. We also crossed the island from west to east, at a point bearing N.N.E. from Duke of York Island, reaching the east coast at a place called Kudukudu; the island of Gerrit Denys, bearing N. ½ W.; and another island, supposed to be one of the Caen Islands, bearing E. by N. ½ N. The west coast consists of a mountain range, rising in most places abruptly from the beach, with jagged and broken peaks, and intersected with deep gullies and ravines, which seem to terminate in many instances inland at the centre of the range, at the base of steep peaks, on which the marks of landslips are plainly visible. The mountains are all well wooded, and the whole of the coast examined was well watered by numerous small streams and rivers, the beds of most of them showing that in seasons of flood large bodies of water find their way down them to the sea. There are very few fringing or shore reefs on that part of the west coast examined by us. In most parts the beach is formed of water-worn shingle or gravel, brought down by the rivers and heaped up by the swell from the prevailing trade-winds. In most places the water is quite deep close inshore, and we could rarely find anchorage for more than a few boat-lengths from the beach.

The principal part of the range examined by us is formed of a "compact light grey limestone, somewhat crystalline, no coral or fossils of any kind visible to the naked eye."

On New Ireland I obtained some large carved figures, which seemed to us to be composed of chalk or burnt coral lime. They were kept in a large house, enclosed with reed fence, and made quite "tabu" to women and children, who were not allowed to go near the place, or to look at the figures if carried outside. Dances were performed in their honour, but they did not appear to be objects of worship. Concerning the material of which they are composed, Professor Liversedge writes:—

"The rock from which the figures brought from New Ireland are carved is a true chalk; in composition it consists essentially of calcium carbonate, and on examination under the microscope it is seen to be made up almost exclusively of the shells of innumerable foraminifera, those of the well-known globigerina being particularly abundant. By brushing the chalk under water with a moderately hard tooth-brush or nail-brush, countless numbers of the almost microscopic shells of these rhizopods can be seen, even without the aid of a lens, to at once stand out in bold relief. On treating it with dilute hydrochloric acid, it dissolves with great effervescence, and leaves a slight insoluble residue, consisting mainly of silica. Under the microscope a few siliceous spicules of sponges, and what is very like the broken frustule of an occasional diatom, are seen mixed with grains of sand in this residue.

"Dana mentions, in his work on 'Corals and Coral Islands,' that the only known locality for chalk in the Pacific is the elevated coral reef of Oahu, near Honolulu; but he states that Professor Bailey found, on microscopical examination, no trace of foraminifera or other characteristic organic bodies; hence this limestone from Oahu is by no means of so typical a chalk rock as that from New Ireland."

Since submitting these specimens to Professor Liversedge, I have received some information about the material from which these figures are formed, which, if proved to be correct, will explain the presence of this chalk on an island like New Ireland. I am told by my native lad from the Duke of York Group, who is with me, that there is no regular deposit of the chalk on the mainland, but that it is hove up on the beach in large blocks by the tidal waves after any severe earthquake, when the natives of the *particular district where alone it is so found* take it and carve these figures from it, which they afterwards sell to other tribes.

The island is not well delineated on existing charts. The range from Kalil (N.N.E. of Port Hunter, Duke of York Group) gradually slopes down to the north, and when near Cape Givry is much narrower than described on the chart; in fact, at a place called Kurumut it is not, I believe, more than one mile in width. To the north of Cape Givry the land rises again very abruptly, and trends away to the north-west.

On expressing my intention to cross the island, I was strongly advised by the coast natives not to attempt it; and most fearful accounts were given us of the ferocity of the natives, and the difficulties and dangers of the way. I was assured that the natives on the opposite side of the island would certainly attack us, even if we escaped the Bush tribes. I am inclined to believe that, though they certainly exaggerated the dangers, probably from a disinclination for us to go to any other district than their own, they themselves really believed in them, and thought it very unwise for us to attempt to cross to the opposite side. They live in such constant hostility to each other, and are so afraid of the Bush tribes, that they themselves rarely go out of their respective districts, and would most certainly expect to be attacked by any tribe through whose country they should attempt to pass.

One of our teachers stationed at Kalil, failing to induce any of the people there to go with him, went in company with a man who had some family connection with some one in the interior and on the opposite side, and on his return we started. Our company consisted of J. Holmes, a seaman from the mission vessel, who had stayed with me; W. Hicks, a half-caste young man from Fiji; four Fijian teachers, and several Duke of York and New Ireland natives. We started from Kalil and followed up the bed of the Matakin River for some distance, and then struck across the range which rises abruptly from the coast. The range was very rough and broken, and the ascent very abrupt, necessitating some actual climbing in several places. We reached the table-land in about seven hours. From the mountain scale on a small pocket aneroid, the highest elevation reached would be a little more than 2500 feet. The reading on the beach was 29·95, and the lowest reading in crossing was 27·20. After reaching the summit of the range we travelled along a pretty regular table-land for several hours, the readings of the aneroid only varying from 27·80 to 27·95; and then we descended regularly through a country where the road passed alternately through thick bush, and open land covered with thick high coarse grass. The land on the east side consists chiefly of a "light porous clay-coloured soil, probably derived mainly from the decomposition of the trachyte," though in the open spaces the clay seemed to be much stiffer than the soil in the bush and far inland. The ascent from the coast is much more gradual on the east side than it is on the west. We experienced no opposition from the natives in the interior, or from those on the east coast, but, on the contrary, had a most friendly reception by them, and were well supplied with food. We reached Kudukudu on the evening of the same day, having been about twelve hours on the way. On our way back we saw more of the Bush people than we saw on our going over. They had heard of our visit, and so were looking out for us on our return. From the number of adult males we saw, it was very evident that the interior is well populated. Some few attempts were made to stop our way, but a few small presents speedily removed all obstacles. We saw very few birds, though we heard the large hornbill several times. We had abundant proofs of the cannibalism of the natives. In one house I counted thirty-five human lower jawbones suspended from the rafters, most of which were blackened with smoke; but some of them were quite clean, and had not been long there. A human hand, smoke-dried, was hanging in the same house; and just outside I counted seventy-six notches in a coco-nut tree, each notch of which, the natives told us, represented a human body, which had been cooked and eaten there. The name of the chief was Sagina, which means "Smelling of," or a "Strong Smell," and was given him because the smell of cooked pork, or human flesh, was said to be always perceived in his village.

A most singular and barbarous custom prevails here in the treatment of some of the young girls. When about six or eight years of age they are taken to a large house, which is well fenced round, and made strictly tabu. Inside of the house are a number of conical structures, about seven feet in height, and about ten or twelve feet in circumference at the bottom and for about four feet from the ground, when they taper off to a point at the top, so presenting something like the appearance of large candle-extinguishers. These rooms or cages are made of the broad leaves of the pandanus, which are sewn quite close together, so that no light and very little air can enter. On one side is an opening or doorway, which is closed by a double door of plaited coco-nut leaves and pandanus-leaves. In each of these cages a young girl is placed when she is about six or eight years of age, and she has to remain there until the mammæ are fully developed, when she is taken out and her marriage feast is celebrated. We were told that these houses are strictly "tabu;" but in our case a few presents gained us admittance, and by a few more we persuaded the chief to allow the cages to be opened, that we might see the inside of them, though the old woman who was sent for to undo the fastenings was at first very unwilling to do so. After a little more talk, the chief allowed the girls to come out to receive a few presents of beads which I held out as an inducement to them, and we then saw the inside of the cages, of which there were three, each containing a girl. About three feet from the ground there was, in each structure a small stage of bamboo erected, and on this the inmate had to sit or crouch, as there was not room to lie down. There was nothing in the cages except some joints of bamboo, filled with water, of which we were told the girls drank a large quantity. The atmosphere inside was hot and stifling, and it seems so incredible that human beings could exist for any length of time in such places, that it was only after repeated inquiries that I could believe it to be a fact. When the girls got out to come for the beads I held out, the old woman who attended them placed pieces of bamboo on the ground for them to walk upon, as their feet must not touch the ground all the time they are in confinement. When they told us that one of the girls had been so confined for more than five years, and had never been outside the house during all those years, I could scarcely credit the assertion, and it was only after repeated inquiries and cross-questionings that I found that such was actually the case. The conclusive testimony was that they had fished the Palolo five different seasons, and as we know that that annelid is only obtained at intervals of twelve months, it was quite certain that they meant five of our years, and not five seasons of six months each. The girls only come out of these cages into the large house once a-day to wash in a small wooden bowl placed near each doorway. I asked if they never died during their confinement; but the people said "No." On asking again if they were not allowed outside in case of sickness, they said, "No; that sick or well they must stay there until their breasts were large." The eldest girl, they told us, would soon be taken out, but the other poor little creatures would have a long time to remain. When we consider that these three structures were inside a house with closed sides, standing on sandy soil, and surrounded by a reed fence, through which very little wind could pass, we may form some idea of the state of the atmosphere inside of them in such a latitude as this.

When we came outside again, I saw some girls with deep fringes crossed over the breasts and back, quite covering the mammæ. These fringes have to be worn until the breasts are fully developed. This custom is followed by those whose parents cannot, or are unwilling to, bear the expense of the feasts which the other barbarous custom entails.

The natives tell me that a similar custom, in a modified form, prevails also on the west coast of New Ireland.

On New Britain I have examined the coast from Cape Orford and Spacious Bay to Cape Palliser, then round Blanche Bay and as far as Port Weber, at the head of a deep bay, about 20 miles east of Cape Lambert. The coast from Cape Orford to Cape Palliser presents no remarkable features. It consists of a low mountain range, rising, as in New Ireland, abruptly from the beach. The island is, however, much wider than New Ireland, and some lofty peaks are visible far inland. The shore reefs are very small, and in many places are altogether wanting, the water being quite deep close inshore. Blanche Bay has evidently been formed by the upheaval of the three volcanic mountains called Mother and Daughters. Between the "Mother" and the N.W. "Daughter," there is a crater, which is of comparatively recent origin, and is still smouldering. It was, I believe, seen in action by one of the early navigators. The sides are still hot, and in many places it is impossible to remain for any length of time. On the day we visited it there was a cloud of smoke issuing from the bottom of the crater near to a large mass of sulphur. On the beach there are several springs of hot water. I had no thermometer with me in the boat, but imagine that the temperature of some of the springs must be near the boiling point, as it was quite impossible to bear the hand in them. The whole of the country round Blanche Bay seems to be formed of volcanic ashes.

GENERAL REMARKS.

Food is plentiful in all the islands, but the Duke of York natives seem to depend on the two large islands of New Ireland and New Britain for their supplies of taro and yams. Bananas, yams, taro, sweet potatoes, with the fruit of several nut-bearing trees, form the principal food of the people. The coco-nut palm is plentiful in some parts, but not nearly so abundant as in Tonga and Samoa. This, however, is simply owing to the indolence of the natives, as the tree fruits very well. The mango is indigenous. The papaw has been recently introduced and, as usual, thrives well. The pine-apple has also been introduced, but is not much valued. Pigs and fowls, the natives say, were not introduced by whites, as they were in the islands before any vessels visited them.

The People of these islands are very much alike, and are evidently of Papuan origin. The men of Duke of York Group are not so fine a race as those of New Ireland and New Britain. They vary in colour somewhat, but are principally of a dark brown colour, with matted, curly hair, which varies from light to dark brown colour. It forms strong matted curls, and these they stiffen and daub with red paint and clay, and occasionally with black paint. The average stature of the males is about 5 feet 6 inches, though many of the New Ireland men were over 6 feet in height. They are well made, lithe, athletic-looking men, of spare build, very few of them being inclined to corpulence.

The women are generally of a stunted appearance, and are not nearly so tall as the males. They are married very early, and have to bear heavy burdens when young, and these, no doubt, account for their stunted growth. Some few of them have pleasant features, especially when young. They do most of the field work and all the cooking.

At Spacious Bay, on New Britain, I noticed a marked difference in the people. They were much lighter in colour than any we had before seen in these islands; their hair also was straighter, and their weapons were very different; notably from their using the large wooden shield which is unknown on New Ireland, Duke of York, or the north end of New Britain. Their language, also, was quite unintelligible to any of the natives from these places; nor could any of us who understood Fijian, Samoan, and Tonguese, detect any resemblance to an Eastern Polynesian dialect. Our visit was, however, a very hurried one. Both men and women wore a slight covering, and the women were much finer than any we had before seen, and seemed to occupy a better social position. With the exception of the women of Meoko, a small island in the Duke of York Group, the women on New Ireland, and the men and women at Spacious Bay, all the people are completely naked. On all the islands the natives are nearly always at feud with each other, and very few indeed ever go far from their own districts, except to a few villages with which they establish trading relations. The Duke of York people visit several districts in New Britain and New Ireland in this way.

They rarely move from their houses without arms; but they do not seem to have any regular system of warfare, nor do they often meet in open fight, but depend principally on surprises, surrounding and conquering some few of the enemy by overpowering numbers. Their usual arms are clubs, spears, tomahawks, and slings and stones. On New Britain stone-headed clubs are much used. They do not use the bow and arrow.

Their houses are low, miserable huts, about eight feet in length by five feet in width, and contain no mats or furniture of any description. There is a small fire-place in the middle, and the inmates lie on each side of it on a few plaited cocoanut-leaves, or a small piece of board. On New Ireland we saw some large houses with raised sleeping benches round the sides, in which the young unmarried men of the village lived.

Language.—The dialects spoken differ so widely that a native of one district can very rarely understand that spoken by the people of another district only a very few miles away. The languages, both in words and construction, differ much from the Samoan and Tonguese, which may be regarded as the typical dialects of Eastern Polynesia. I am well acquainted with Samoan, having resided more than fourteen years in that group; and I understand Tonguese, and can also speak Fijian with some degree of fluency, having been lately compelled to study that language in order to be able to communicate with our teachers from that group.

In construction, the language spoken on these islands is more like the Fijian than the Samoan, especially with regard to the prominent affixes, which are not used in Samoa: e.g.—

English.	*Samoan.*	*Fijian.*	*Duke of York.*	*Tongan.*
Father.	tama.	tama.	tama.	tamai.
My father.	o lou tamā.	tamazu.	tamag.	hoku tamai.
Your father.	o lōu tama.	tamamu.	tamam.	hoo tamai.
His father.	o lona tamā.	tamana.	tamana.	hono tamai.

These pronominal affixes are continued in the dual, triad, and plural numbers. The triad number is found in all the dialects here as in Fijian, but is wanting in all the purely Eastern Polynesian dialects.

I have as yet found very few Eastern Polynesian words, but the few noticed are interesting.

English.	*Samaon.*	*Fijian.*	*Duke of York.*	
Father.	tama.	tama.	tama.	tamai (Tongan).
Hand.	lima.	lima.	lima.	(also in New Ireland, New Britain).
Five.	lima.	lima.	lima.	(also in Maori, New Ireland, and New Britain).
Face.	mata.	mata.	mata.	(also in Maori, New Ireland, and New Britain).
Die.	mate (of animals).	mate (men and animals).	mate (men and animals).	(also Tongan).
Sea.	tai (also sami).	wai tui.	tai.	tahi (Tongan).
Ground, land.	fanua.	vanua.	wanua.	fonua (Tongan), whenua (Maori).
Heaven.	lagi.	lomalagi.	maua (but lagi in one dialect).	
Cry.	tagi.	tagi.	tagi.	tagi (Tongan).
Fly.	lago.	lago.	lag.	lago (Tongan).

N.B.—Vowels pronounced as on the Continent: *g* sounded as *ng*.

The few words just given are found in many other dialects of Eastern Polynesia. The Samoan has simply been selected for comparison, because it is the dialect with which I am most familiar. In Fijian, Samoan, Tonguese, Maori, and all the languages in Eastern Polynesia, of those called the Malayo-Polynesian, with the exception, perhaps, of Rotuman, all syllables and words must end with a vowel; but in these islands this is not the case, and our teachers have great difficulty in pronouncing many of the words.

Like all Papuans, I believe, the natives here count to five only, whilst all Eastern Polynesians count to ten: e.g.—

English.	*Duke of York.*	*Samoan.*
One.	ra.	tasi.
Two.	ruadi.	lua.
Three.	tuludi.	tolu.
Four.	wātdi.	fa.
Five.	limadi.	lima.
Six.	limadi ma ra.	ono.
Seven.	limadi ma ruadi.	fitu.
Eight.	limadi ma tuludi.	valu.
Nine.	limadi ma wātdi.	iva.
Ten.	naina, or limadi ma limadi.	sefulu.

But it is a singular fact that in counting couples they count to ten (couples), and the words used are nearly the same as those used in Eastern Polynesia, e.g.—

English.	*Samoan.*	*Fijian.*	*Duke of York.*				
One.	e tasi.	e dua.	te kai.	=	1	couple, i.e.	2
Two.	e lua.	e rua.	u rua.	=	2	,,	4
Three.	e tolu.	e tolu.	u tul.	=	3	,,	6
Four.	e fa.	e va.	lu wal.	=	4	,,	8
Five.	e lima.	e lima.	ti lim.	=	5	,,	10
Six.	e ono.	e ono.	ua nom.	=	6	,,	12
Seven.	e fitu.	e vitu.	ma wīl.	=	7	,,	14
Eight.	e valu.	e walu.	ti wal.	=	8	,,	16
Nine.	e iva.	e ciwa (pron. thiwa).	ti wūr.	=	9	,,	18
Ten.	e sefulu.	e tini.	ti kino.	=	10	,,	20

I am engaged, with the assistance of the teachers, in forming vocabularies of the different dialects, and have got many words from all the islands, but some further time and study are required before deciding on the written forms. I give examples of a few words, about the pronunciation of which there can be no difficulty:—

English.	*Samoan.*	*Fijian.*	*Duke of York.*	*New Ireland.*
Father.	tamā.	tama.	tama.	māmā.
Mother.	tinā.	tina.	nakug (my).	makai.
Head.	ulu.	ulu.	lorig (my).	aualuku.
Leg.	vae.	yava.	kakig (my).	kakig (my).
Face, eye.	mata.	mata.	matag (my).	matag (my).
Sun.	la.	siga.	make.	kesakesa.
Moon.	masina.	vula.	kalag.	teka.
Stars.	fetu.	kalokalo.	nagnag.	pabeka.
Light.	malamalama.	rarama.	keke.	kesakesa.
Dark.	pâulíuli.	bulobuto.	marum.	bug.

English.	*Samoan.*	*Fijian.*	*Duke of York.*	*New Ireland.*
Fire.	afi.	buka.	ougan.	otiā.
Water.	vai.	wai.	danim.	atahā.
Hot.	vevela.	katakata.	kalap.	
Cold.	malili.	liliwa.	amudian.	madoan.
	maile, or uli.	koli.	pap.	lebur.
	imoa.	kalavo.	koupwa.	gũo.
Pig.	pua'a.	vuaka.	boro.	borei.
To sleep.	moe.	Moce (pron. mothe).	nenep.	suā.
To run.	momœ.	Cici (pron. thithi).	kalā.	
To walk.	savali.	lako.	wan.	
To talk.	tautala.	vosa.	piripiri.	agaiago.
To hear.	logona.	rogoca.	logoroi.	
Drink.	inu.	gunu.	inim.	moma.
See.	vaai.	raica.	boboi.	
I.	o au.	koi au.	iau.	
Thou.	o oe.	ko iko.	ui.	
He.	o ia.	ko koya.	I.	

I cannot as yet find the reciprocal form of the verb which forms so prominent a feature in Eastern Polynesian dialects. All verbs seem to admit of many prefixes, and inflections, especially in the plural form; but we have not yet been able to reduce them to rule.

The *power of the chiefs* is very small indeed; in fact, they seem to have little or no authority over the people, except so far as the possession of shell money enables them to purchase help to punish any individual or district who may have offended or injured them. The rank, so far as we know at present, is not hereditary. The rule here also seems to be "the selection of the fittest and the survival of the strongest." The man who has the most shell money and is the best fighter appears to be acknowledged chief.

Polygamy is extensively practised, the women being bought with cowrie money. These sales are often effected when the party sold is yet quite a little child. In these cases she remains with her parents for some years until the husband wishes her to go to his house.

A singular custom prevails here with regard to the sons of many chiefs. About the time of their attaining the age of puberty they are taken into the bush, where a large house is built for them and their attendants. Here they remain for several months, and during this time they are well fed with pork, turtle, shark, and anything else they please. They are then initiated into certain ceremonies, and after this they never again taste either pork, turtle, or shark during the remainder of their lives. So scrupulous are they on this matter, that I have known a young man to suffer acutely from hunger rather than eat a piece of taro which had been cooked in the same oven with a piece of pork.

Another popular institution is that of Duk Duk. This seems to be the privilege of chiefs. Duk Duk is a masked figure, which is invested by the people with some very mysterious powers, but what these are we have not as yet found out. It is a man dressed in a very high conical mask, and with his body quite covered by large leaf girdles. Some weeks are spent in preparing for the ceremonies connected with this affair, and during all these weeks the roads and grounds near the Duk Duk house are tabu to all women and children. At stated intervals the Duk Duk comes dancing out of the bush into the village square, when all women and children flee out of his way, as he has the privilege of beating or stoning them if he can do so. After some weeks there is a great feast, and all these Duk Duks exhibit themselves. Then one or two of the chiefs advance and challenge the crowd with spears, and then take their stand with one of the Duk Duks at one end of the square, with large sticks or rattans in their hands. Numbers of the people then rush out one by one and challenge the chiefs, and seem as if about to dart their spears at them, and then they stoop down in front of the old chief (or one of the Duk Duks) who at once gives them a hard blow with his stick, or rattan, over the back. Some of the blows seemed very heavy indeed, and must have caused some pain to those who received them. After a great many had been thus honoured with the old chief's rattan, the ceremonies closed by feasting and distributing shell money.

All the people in Duke of York Group, New Ireland, and New Britain, so far as we have been, are divided into two distinct classes, called, respectively, Maramara and Pikalaba, and the custom is that a Maramara must marry a Pikalaba, and *vice versâ*. It is considered to be a very vile thing indeed if this rule is ever broken. In fact, there were only two instances known where two chiefs on New Ireland had dared to disregard this prohibition. The children are all of the same class as the mother, in all cases, and as they must all marry into the other class, intermarriages are thus in a great measure prevented, though in addition to this there are also prohibited degrees even between Maramara and Pikalaba. The land, coco-nuts, and fruit-bearing trees also in all districts are apportioned between these two classes, so that on the death of the father, the children in most cases go to the mother's village, where alone they have land or coco-nuts. I am inclined at present to think that this custom, in some varying forms perhaps, will be found to be one of the distinguishing marks of Papuan origin; whilst the custom called Tama-sa, or Tamafafine in Samoan, Tamaha in Tonga, and Vasu in Fijian, will be found to be the distinguishing mark of what are called the Malayo-Polynesian races. This last custom is that of attaching a semi-sacred position and giving peculiar privileges to the sister and sister's children.

A large number of objects of natural history was collected, specimens of which have in most cases been transmitted to England for examination. I hope to return to the group next year, leaving Sydney probably in April.

VII.—*Colonel Sosnoffsky's Expedition to China in* 1874–5.

[Abridged and tabulated from the Russian, by Capt. F. C. H. CLARKE, R.A., Member of the Geographical Society of St. Petersburg.]

FROM the time of the cessation of trade in Kuldja and Chuguchak, the Russian Government has turned especial attention to the opening of fresh markets for Russian enterprise in other parts of China. But the disturbed state of affairs, and the lack of information with regard to the trading towns in the interior, did not permit of any decisive measures being adopted. At the commencement of 1874 it was, however, resolved to equip an expedition, (1) for the purpose of exploring a road from the Zaisan Post, in the Semipalatinsk district, to the south-west provinces of Trans-mural China; (2) to report upon the prospects of trade in this direction, and, if satisfactory, to decide at which points it would be desirable to establish consulates and factories, or trading agencies; and (3) to collect as complete information as possible concerning the so-called Dungan movement, with a view to determining the future political fate of the localities involved in the insurrection.

The command of this expedition was intrusted to Lieut.-Col. Sosnoffsky of the General Staff. The other members were Doctor Piacetsky, Captain Matusofsky as topographer, Mr. Andriefsky of Irkutsk, a photographer, a Chinaman in the tea-trade, and three non-commissioned officers of Cossacks.

The cost of the expedition was defrayed partly by the Government and partly by private subscription.

On the 12th of July, 1874, the Expedition passed the frontier at Kiakhta and reached Pekin on the 19th of August. From this place it proceeded by sea to Hankow, where it arrived towards the end of October.

Then came the knotty question whether the members of the expedition should proceed as private individuals, or in an official capacity. The latter alternative was ultimately decided upon.

It having been agreed beforehand to follow the diagonal leading to the valley of the Black Irtysh, the Expedition ascended the Han-kiang, at the mouth of which river lies Han-kow. The river district of Han-kiang embraces three of the richest provinces of China—Hoo-pei, Shen-si, and Ho-nan In the lower part of Hoo-pei the river is navigable for steamers of considerable draught. Its course is gentle and equable; the banks are sometimes low and sandy, sometimes elevated and argillaceous; inland are seen fields of the cotton-plant and rice, with an unbroken chain of villages and farmsteads nestling in the shade of the willow and cytisus. The mass of ships, large and small, plying incessantly to and fro, gives the appearance of a forest of masts. In its middle course, the Han-kiang pierces the range of the Oo-tan-shan, rich in coal-seams. Here the river has numerous rapids. At such points, although the stream has a rapidity of 9·5 feet per second, navigation by small steamers would be possible if the channel were improved. In the upper parts of the river navigation is difficult, owing to the slight depth of water and the frequent sandbanks.

Further north, the landscape changes: the variety of scene disappears; no longer is seen the elegant palm or the evergreen tuwi; the clayey strata of the hills exhibit the vegetation of the north, and fields of wheat overspread the broad valleys. The whole of this section, from Han-chong-foo to Lan-chow-foo, averaging 3800 feet of absolute elevation, presents a knot of mountains and hills known by various local names, and giving birth to the Han-kiang, the Kia-lin-kiang, which gives its waters to the Yang-tse-kiang, the Pei-ho, and other less important streams belonging to the system of the Hoang-ho. Further on, between Lan-chow-foo and An-sin-chow the road passes along a mountain valley; on the sides are seen rich pasturages, alternating with barren saline tracts; to the left, the wall of the snow-clad range Nan-shan, and to the right, the arid and naked tops of its outliers, over which climbs the historical "Van-li-chan-chen," or the 10,000 li wall.* Villages are frequent, but few of them have escaped the Dungan devastation; towns which at one time flourished, like Gun-chan-foo, are reduced to a heap of ruins; villages are deserted, the inhabitants apparently fearing to leave their holes in the mountains and come down to the valleys. Their misery was such that human flesh has been their chief means of subsistence. Domestic animals, like the pig, roam about in a wild state and attack man. Still, the pristine order is being slowly re-established owing to the energy of the present Governor-General of Shangani, the viceroy of all the western border; at the present time the entire road to Chuguchak is occupied by a continuous chain of posts and guards. In Lan-chow-foo, the administrative centre of Shangani, we passed a month, enjoying the greatest attention and hospitality in the house of the Governor-General Tso-tsun-tan.

We may observe, generally, that our expedition presented an unwonted appearance for China. Along the roads letters had been sent indicating the places where we were to breakfast, dine, and sleep; the troops, authorities, and people came out to meet us; the fortresses belched forth salutes, the towns were decorated with flags and were bright with illuminations; the amiability of the people was such, that even the bridges and roads were repaired.

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* A Chinese li is about equal to one-third of an English mile.

Before quitting Lan-chow, Tso-tsun-tan placed at my disposal a general, a colonel, a district-governor, a sub-district-governor, a non-commissioned officer, and a soldier—in a word, representatives of every grade and condition. They had orders to accompany our march and to do all in their power for us.

How is this attention to be explained?—it may be asked. First, and foremost, our open mode of business and the frankness of our relations. Nature has endowed the Asiatic with a peculiar aptitude for craft and subterfuge, so that the chances of contending with him in these arts would be most unequal. Secondly, our good relations with the authorities. China is ordinarily credited with being the incarnation of ideas of centralisation; but this is far from being the case. Here everything depends upon personal ties and relations; in the absence of formality in their relations, China calls to mind the khanates of Asia. There where the form of government is founded on simple family, patriarchal principles, it cannot be otherwise. Not only are the viceroys and governors-general of provinces perfect satraps, but every "Sian," or governor of a sub-district, is an important personage capable of interposing every possible difficulty. To a complaint in writing he will always reply —for half his life has been spent in acquiring the *belles lettres* —but he will never condescend to personal inquiries; for as it does not behove the puissant "son of heaven" to emerge from the precincts of his palace, it would not be *comme il faut* for local magnates to go on a tour of inspection in their provinces. These were my personal observations, but many other instances might be adduced. It is a well-known fact, that the Chinese government could only quiet its intractable son, the renowned pirate who ravaged the China Seas, by creating him general-admiral of the fleet; the famous Li-tsun-tan was at first on the side of the rebel Taepings, and only afterwards came over to the side of the Government. He now occupies the important post of Governor-General of Chi-li, and takes an active part in its administration. The French expedition only achieved its object by giving to the Governor-General of Yunnan a reserve of warlike stores for the struggle with the Pentas. Lastly, we have a prominent example at home. It is well-known that the Amur country was ceded by the local governor-general, and the Tsun-li-amin subsequently legalised a fact which was already accomplished. The Russian name indeed, is in good odour; whereas the remembrance of the wars with the French and the English still lives in the minds of the nation; neither is the evil caused by the opium trade forgotten. Lastly, the arrangements which I made with Tso-tsun-tan for delivering provisions at Guchen, and the gifts of money for the poor, played no insignificant *rôle.*

A mile from An-sin-chow we cross the steppe river Bulun-tsir, beyond which, as if by magic, all vegetation ceases. We are in Gobi. But it is far from being a wretched desert, where nothing but privations and miseries await us. Water lies close to the surface. Near such springs and in the mountain valleys is found underfoot grass, not only for camels but for horses. In places a mantle of vegetation extends for a considerable distance, affording browsing ground for herds of wild animals, camels, asses, &c. After eight days' march we reach the fertile oasis of Khami, and another day over the barren plains brings us in front of the Tian Shan, the gray tops of which have been visible some distance before Khami. At Khami the road bifurcates, one branch leads along the south side of the Tian Shan to Turfan and thence to Kashgar, while the other passes north to Barkiul, by a carriage-road over the Tian Shan. From Barkiul the roads fork again: one branch to Uliasutai, 26 days' journey; and the other, the old well-made road leading to Guchen. Here are several new branches; to Kuldja, Chuguchak, Kobdo, and to the Zaisan Post—by a good post-road across Bulun-tokhoi—and another straight across the desert, amid the haunts of nomad Torgoutes.

On the 11th of January, 1875, the expedition quitted Hankow, and by the middle of October we were at Zaisan, having traversed 2700 miles, of which 800 were by water, 160 with pack-animals, and the remainder, *i.e.* 1700 miles, in carts.

The new route is shorter than all others leading from European Russia to the interior of China; it is available for carts throughout, with the exception of the 160 miles by pack-animals; there is an absence of natural obstacles: the road is level and hard, with water everywhere, underfoot grass and fuel; the road traverses populous localities, and only for eight marches in Gobi is there no sedentary population, whilst by every other route through Mongolia we have to travel for a month before meeting a habitation; moreover, various means of locomotion offer—mule, cart, or camel—while on the other Mongolian roads one is restricted exclusively to camels.

We will now compare the routes as regards the saving in distance, time of transport and expense.

As regards distance. The distance, say from Tiumen to Hankow by Kiakhta and Tian-tsin is 6970 versts; by the western route, the distance from Tiumen to Han-chong-foo is

4782 versts, consequently there is a saving of 2200 versts, or 1460 miles.

As regards time of transport, the time by the old route from Tiumen to Han-kow was 202 days, by the new route from Tiumen to Han-chong-foo it is 140 days.

As regards cost of transport it is 9 r. 90 k. per pood of 36 lbs. cheaper by the new route.

The following, then, is a summary of the advantages of the new route.

(1). It presents such advantages that it is capable of competing with the sea-route.

(2). It leads to localities where our manufactured wares will have an assured sale; while we shall receive in exchange the products necessary for ourselves at prices exceedingly favourable. Cloth is sold at 90 to 100 roubles the piece, whilst in Tien-tsin and Hankow it is considered possible to give it for rather more than 70; tea is obtained for 14 copecks a pound, whilst the same sort in Hankow sells for not less than 35 copecks; rhubarb, which is purchased at Tien-tsin and other parts for not less than 20 roubles per pood (36 lbs. English), costs here 3 to 4 roubles; raw silk of the worst quality is sold in Moscow for 200 roubles a pood, and in Han-chong-foo the best is 80 roubles.

(3). By the new route the sale of manufactured products will increase.

(4). The comparatively small disbursements of capital which are necessary, open a field to a considerable number of traders.

(5). After the first trials, there is no doubt that it will be possible to lower generally the duties on tea, as it will be obtained at less expense, and, consequently, make it accessible to the mass of consumers.

The general deductions from the results of the expedition will have shown the reader that the diagonal leading from the valley of the Irtysh to the north-west provinces of China, unites all the conditions for being the most important artery for the trade between Russia and China. Compared with the Kiakhta route it has the advantage of being the shorter by 1460 miles, thereby diminishing the cost of transport by about 4*l.* per cwt., and lessening the time in which capital is locked up. It is not a new line: on the contrary, it is a very old one. After the subjugation of Turkestan and of Tsungaria, the so-called new line became the chief means of communication of China with the newly-acquired possessions in the interior; trading colonies began to spring up, exchange of products took place, roads were opened up as much as possible, and all went on smoothly until the Mahommedan insurrection destroyed the existing order of things. No other route through Mongolia could compete with it. The Kiakhta route—the best of the remainder—may be said to have been created by Kiakhta, to have developed *pari passu* with that town, to have outlived with it its best days, and now is destined, apparently, to subserve exclusively the local interests of Eastern Siberia. The Uliasutai route is often canvassed. We should remark, that at one end it rests on the important town of Hui-hua-chen, then intersects Mongolia in a north-west direction, by way of Khobdo and Uliasutai, and issues either into the Bukhtarmin district and Semipalatinsk, or along the valley of the Chui into Büsk. Hui-hua-chen has no importance of itself, but attained its present development owing to the increased traffic to Kiakhta when the San-sis began to send their tea thither; Uliasutai and Khobdo are military colonies, without any future. As regards the state of the road, the Mongolian part passes through desert districts, sandy and partly waterless, and, in truth, is the worst of all the Mongolian roads; while the Altai part is a mountainous road, in places even difficult for pack-animals, and in any case incomparably worse than that always practicable route along the course of the Irtysh, and which from time immemorial has served as the historical road of nations; lastly, as regards its length, a simple glance at the map will show that the Uliasutai route is the longer, just as every arc is longer than its chord.

In order that the reader may make his own deductions as to the advantages or disadvantages of the different routes, we append the following:—

1. Extract from the route journal of the expedition (Route No. 1).
2. Information on the routes from Pekin to Hankow, by M. Andriefsky (Routes 2, 3, and 4).
3. Two routes from Fan-chen, on the lower Han-kiang, through Si-an-foo to Lan-chow-foo (Nos. 5 and 6).
4. Routes (1) from Han-chong-foo to Ching-tu-foo, chief town of the Si-chuan province; and (2) two secondary roads from Han-chong-foo to Lan-chow-foo (Nos. 7, 8, and 9).*
5. Three routes, taken from the diary of Tsi-ho-chow (translated by the Archimandrite Palladius), who was sent at the commencement of the present century to Kuldja, with additional information obtained during the expedition; (1) a second road, from An-sin-chow through Gobi to Khami; and (2) from Khami through Turfan to Urumtsi, and thence to Manass in Kuldja (Nos. 10, 11, and 12).

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* These three routes are not given in this translation, as they contain little information beyond the names of stations; moreover, they are compiled from hearsay and from the Chinese official guide-book.

ROUTE No. 1.

FROM HANKOW TO HAN-CHONG-FOO, BY THE RIVER HAN-KIANG.

NAMES OF PLACES.	Distances in Versts.		Nature of Road, River, &c.	REMARKS.
	Intermediate.	Total.		
Hankow .. .. .. Lat. 30° 32′ 51″ Long. 114° 19′ 55″ (from Greenwich). Abs. height 150 ft.	..	..	.. ..	Lies on left bank of the Yang-tse-kiang, 582 miles from mouth, but accessible for naval vessels. Population 300,000.
Ye-tsia-kow	191½	..	.. ..	Village on left bank.
Sha-yan	100½	292	.. ..	Village on left bank.
Fan-ching .. .. Abs. height 720 ft.	250	542	.. ..	Town on left bank. At the village of Lin-ker, 5 miles from it, leads the great trade-route to Pekin, Kulgan, and Hui-hua-chen, at first by water along the Tan-ho, an affluent of the Han-kiang, and then by road. Opposite Fan-ching, on the right bank, is the town of Siang-yang-foo. 6000 troops stationed here in a permanent camp on the left bank, under the walls of Fan-ching.
Lo-he-kow .. .. Lat. 32° 25·6′ Abs. height 738 ft.	68	610	River navigable for steamers of burthen to this point. Depth 8 ft.—10 ft. and more. Rapidity 1′·5 per second. Along the banks numerous villages.	A large village on the left bank of the Han-kiang, surrounded by a wall about 40 li in circumference; 20,000 houses and 60,000 inhabitants. 2000 large shops.
Yun-yang-foo	120	730	River pierces the gold-bearing range of the Oo-tan-shan. Rapids in places, but no impediment to passage.	Town is built on the steep, picturesque, left bank of the Han-kiang; 15,000 inhabitants. Large cultivation of silk.

Sin-an-foo	211	941	Rapids more frequent and more difficult, particularly when entering the province of Shen-si (at the town of Bei-ho-sian). Rapidity of stream in places 9′·5 per second.	Sin-an-foo was formerly a circle town (chow), and only of late has been raised to a district town (foo). Town on right bank; divided into two separate parts, each of which has its special enclosure. Garrison town. 5000 shops. 45,000 inhabitants, including 2000 Musulman families. From here leads a road to Han-chong-foo: 720 li of good level road.
Tzi-yan-sian .. .. Lat. 32° 31·5′	83½	1024½	In the neighbourhood of Sin-yan-foo, and ascending to Tzi-yan-sian, the river banks present a coal-formation, of indifferent quality. Rapids in river.	Town, with population of 1000 families, living by tea trade.
Shi-chuan-sian	89½	1114	Frequent rapids in river, but not difficult. Stream hemmed in by rocks.	Town of 2000 families. Tea and silk cultivated.
Yang-siang	108½	1222½	Many rapids. About 100 li further up is the dangerous Go-tan rapid and then the defile of Huan-tsin-sia. After passing the latter the valley widens. In the distance are seen the outlines of low hills.	Town of 3000 families. District furnishes excellent silk. From Tsa-chen to Han-chong-foo leads also a road (420 li or 108 miles).
Han-chong-foo .. .. Lat. 33° 58′ Abs. height 2021 ft.	46½	1269 Versts, or 846 Miles.	.. ..	District town in the province of Shen-si, lies on the upper part of the Han-kiang, and distant from Hankow 800 miles. Inhabitants 80,000. Bulk of population Si-chuans, only 500 Musulman families. 600 shops. Town besieged by Taepings in 1862. Town situated in a pretty, healthy locality, surrounded on all sides by the lower spurs of the Oo-tan-shan, covered with dense vegetation. Heat in latter half of April 36°—38° C. In June and July heavy rains. Trade—tea, silk, saffron, tobacco. Means of transport, boats; by road, mules and horses. 5000 troops here.

ROUTE No. 1.—*continued.*

FROM HAN-CHONG-FOO TO TSIN-CHOW (BRIDLE-PATH).

NAMES OF PLACES.	Distances in Versts.		Nature of Road, River, &c.	REMARKS.
	Inter-mediate.	Total.		
Han-chong-foo—*cont.*	..	..	.. ..	From Han-chong-foo to the north lead 3 roads; the eastern to Bow-tsin-sian, the western to Li-sian, and the central to Tsin-chow. All are equal in length and are bridle-paths. The last is said to be the best, and was the one followed by the Expedition.
Sin-tsi	20	..	Road along left bank of the Han-kiang .	Village.
Mian-sian	16	36	Here road branches; north to Lan-chow-foo, and the south to Ching-tu-foo, chief town of the Si-chuan province, a good carriage-road. From Mian-sian to Nian-nian-pa, road either passes through defiles, traversed by torrents, or through the passes of the Ba-chong-shan, quite practicable for pack-animals, although steep in places. In the valleys rice-fields, but on the slopes winter-corn was already cut; at the end of May fresh sowings of beans, &c. The green of the fields is varied with that of the palm-nut and tuwi, under the shade of which are seen the huts of the mountain population.	Town.
Ho-tsia-yai	31	67	.. ..	Mountain defile, in which lies the village, and through which passes the road.

Lo-yang-siang	22½	89½	.. ..	Situated on the river Hei-yui-kiang, which forms the upper part of the Kia-lin-kiang, and in so narrow a defile that the town wall entirely closes it; entrance to S. gates from Han-chong-foo by a rocky ascent. This was the most northern point to which the Taepings penetrated; they are called locally "Chan-moroo," or "the long-haired."
Tie-chan-tsa	19½	109	.. ..	The slopes of the defile, in the midst of which lies this village, are luxuriantly green with the tuwi, the Phytolacca, and the "gow-shu" (like the hazel hedge).
Da-ho-dian	26	135	.. ..	So called from its lying on the great navigable river Kia-lin-kiang ("da" = great; "ho" = river; "dian" = dwelling) which falls into the Yang-tse-kiang at the town of Chun-kiong-foo. Near Da-ho-dian commences the frontier of the Han-soo province.
Wei-sian	16	151	.. ..	Town.
Yoi-shu-pa	28½	179½	.. ..	Village.
Kow-tsiao	22	201½	.. ..	Village.
Nian-nian-pa	34	235½	.. ..	Village.
Tsin-chow	29	264½	.. ..	The natural advantages of Tsin-chow have made it an important trading centre. Here meet the roads: from the north from Lan-chow and Hoo-ho-nor, from the south from Si-chuan and the river district of Han-kiang, and from the east along valley of Bo-ee. 40,000 inhabitants. In the district much cattle-breeding. Horned cattle, horses, mules, asses, and sheep. 600 shops. Here commences a carriage-road to the Russian frontier, to the valley of the Irtysh and to Kuldja. Tsin-chow is situated half-way between Han-chong-foo and Lan-chow-foo.
Lat. 34° 37′·3		Versts, or		
Abs. height 4763 ft.		176		
		Miles.		

ROUTE No. 1.—*continued.*

ROUTE FROM TSIN-CHOW TO LAN-CHOW-FOO (CARRIAGE-ROAD).

NAMES OF PLACES.	Distances in Versts.		Nature of Road, River, &c.	REMARKS.
	Intermediate.	Total.		
Huan-tsa-chen	36	..	Carriageable road over clay soil, with gentle ascents and descents, and would be good but for the deep ruts.	District to Kung-chang-foo, rising to a height of 3800 ft., is a network of mountains known under different names, and giving birth to the sources of the Han-kiang, the Tsia-lin-kiang, which gives its waters to the Yan-tse-kiang, the Wei-ho, and others belonging to the Hoang-ho system.
Fo-kiang-sian	17½	53½	.. ..	Town.
Voo-shi-li-poo	20	73½	.. ..	Village.
Ning-yuan-sian ..	23	96½	.. ..	Town.
Si-shi-li-poo	18	114½	.. ..	Village.
Kung-chang-foo ..	17	131½	Road from here to our frontier is carriageable, and is occupied by a line of posts and temporary camps of troops.	This town was entirely destroyed by Mahomedan gangs in 1866, and has not been rebuilt.
Fan-yui-moo	34½	166	.. ..	Village.
Chin-pin	26	192	.. ..	Village.
Ti-dao-chow .. .. or Tao-choo	33¾	225¾	.. ..	The same clay hills, over the passes of which trends the road. The town of Ti-dao-chow is near the important river Tao-ho, affluent of the Hoang-ho. Surrounded with an earthen wall which, like the town, has been rebuilt since it was burnt down in 1863 by the rebels.

Kan-tsia-yui	26	251¾	.. ..	From Kan-tsia-yui, branches a road to Ho-choo, and thence to Si-nin-foo.
Sho-no-dzian	16½	268¼	.. ..	Village.
Va-gan-chen	33½	301¾	The road, hitherto up and down hill but perfectly practicable, ends before reaching Va-gan-chen with a steep pass (7400 ft.), the only difficult place between Tsin-chow and Lan-chow-foo.	Important coal-mines in vicinity.
Lan-chow-foo .. .. Lat. 36° 7′·5 Abs. height 5607 ft.	20½	322¼ Versts, or 215 Miles.	.. ..	Town. Chief administrative centre of Shan-gani, Hoo-ho-nor, and lately of all Tsungaria. Inhabitants 100,000, of whom 600 Musulman families. 500 shops. Trade—tea, tobacco, silk, and rhubarb. Transports—carts and mules. Residence of Governor-General of the province of Shen-si, Han-soo, and the Mongol district of Hoo-ho-nor, as well as of Tsungaria and Eastern Turkestan.

ROUTE FROM LAN-CHOW-FOO TO SU-CHOW-FOO.

			Road crosses to the left bank of the Whang-ho, and trends north-west, keeping this general direction to the frontier of Gobi; on the left it is accompanied nearly the entire distance by the snowy range of the Nan-shan, and on the right by the arid and naked crests of its outliers. The passage of	

ROUTE No. 1.—*continued.*

ROUTE FROM LAN-CHOW-FOO TO SU-CHOW-FOO.

NAMES OF PLACES.	Distances in Versts.		Nature of Road, River, &c.	REMARKS.
	Inter-mediate.	Total.		
			the river is under the walls of the town by a permanent bridge of 24 boats. River here is about 230 yards wide; covered with ice at end of November, free at end of February.	
Yui-tsia-van	33	..	.. ..	Village.
Hun-chen-ee	38¾	71¾	Along the road many half-destroyed villages; soil clayey.	
Pin-fan-sian	40½	112¼	.. ..	Town situated in the fertile valley of the Pin-fan-ho. It is a combination of two towns; one is called Chuan-lan, and is populated by Manchus, and the other is the Chinese town.
Cha-kow	36½	148¾	.. ..	Village.
Lun-go-poo	42	190¾	.. ..	Village.
Guan-san	23	213¾	.. ..	Town.
Tsin-bian	25½	239¼	.. ..	Village.
Lian-chow-foo	34½	273¾	Road passes in the midst of naked rocky heights, with gentle ascents and descents, but the numerous stones and rocks, particularly when leaving Tsin-bian, makes travelling by carriage	District town, made up of two separate parts; the Manchu town of 10,000 inhabitants and the Chinese of 30,000. Rhubarb found in abundance on neighbouring mountains.

			unpleasant. An immense number of separate villages, but not one which has not suffered destruction.	
Fin-lo-poo	34	307¾	On approaching Yun-chan-sian country becomes open, and the road passes over small pebbles, liked the dried-up bed of a river. Soil clay.	Village.
Yun-chan-sian	42¾	350½	.. ..	Town.
Van-si-poo	27¼	377¾	.. ..	Village.
Tsia-kow-ee	31½	409¼	At this village the road pierces a lateral branch of the Nan-shan, but shortly issues again into an open valley, although stony as before. The great wall runs parallel to the road. It is seen shortly after leaving Lan-chow-foo, sometimes approaching, at other times receding.	Village in ruins.
Shan-dan-sian	42	451¼	.. ..	Town.
Dun-lo-tin	23½	474¾	.. ..	Village.
Gan-chow-foo .. .. Lat 39° 0′·2 (Height 5572 ft.)	35	509¾	.. ..	District town, formerly called Chong-ye. Entirely saved from destruction through the energy of the garrison and population. Town wall 3 miles in circumference, and with four gates. 10 streets. 32,000 inhabitants, of whom 1000 Mahomedans. 550 shops. Carts, mules and camels for transport.
Sha-ho	3¼	543¾	Pass many arms of the Hei-shui, for a distance of 5 miles; the first and last deeper than the others, and at full water present difficulties to passage.	Village.

ROUTE No. 1.—*continued.*

ROUTE FROM LAN-CHOW-FOO TO SU-CHOW-FOO.

NAMES OF PLACES.	Distances in Versts.		Nature of Road, River, &c.	REMARKS.
	Intermediate.	Total.		
Gow-tai-sian	43½	587¼	.. ..	Town.
Hoo-chan-tsi	35½	622¾	.. ..	Village.
Yan-chi	31¼	654	.. ..	Village lying near a large salt-lake. Large salt-tracts with sand and exposed gravel.
Lin-shui	43	697	.. ..	Village on the river of the same name; bridge.
Su-chow-foo .. .. Lat. 39° 48′·3 Abs. height 5540 ft.	24¼	721¼ Versts, or 480 Miles.	.. ..	Town called formerly Tsiu-tsuan-tsiun. Not long ago a flourishing place of 20,000 inhabitants, but in June 1872 turned to a heap of ruins. 200 shops.

FROM SU-CHOW-FOO TO AN-SIN-CHOW.

NAMES OF PLACES.	Intermediate.	Total.	Nature of Road, River, &c.	REMARKS.
Tsia-yui-guan .. .. (Fort).	26	..	.. ..	This fort guards the extreme west issue in the Great Wall. The mountains form a defile; in its middle is the fort, which is so situated that the whole of the interior can be raked from the neighbouring heights. Garrison consists of several battalions; but there are no guns, either fortress or field, in the place.

Hoi-hoi-poo	34¼	60¼	This march is comparatively worse than the others, the road being stony and in some places sandy, particularly near the village of Fan-tsin-tsa; to this may be added that the fording of the numerous branches of the Tola is difficult at full water.	Formerly a large village, occupied exclusively by Mahomedans, from which it received its name:—(Hoi-hoi = Mahomedan; Poo = village), but now has less than a hundred Chinese families.
Chi-tsin-poo	37¾	98	.. ..	A village near the salt-lake Chi-tsin-hoo. Ground open and level; along the road and off it extend villages.
Yui-min-sian	43¾	141¾	.. ..	A clean district town, surrounded by fields of wheat, barley, millet, &c., which extend also along the road as far as An-sin-chow.
Si-tsia-tan	28¾	170½	.. ..	Village. Half-way is the large village of San-dow-gow, where there is a permanent camp of troops.
Bu-lun-tsi	37¾	208¼	Both the last marches lie under the shade of the elm, the poplar, and the aspen, amid which are hidden numerous villages.	
Siow-van	24	232¼	Route less good	Morass of great extent near village of Pa-dow-gow.
An-sin-chow .. .. Lat. 40° 31′·4 Abs. height 4810 ft.	27¾	260 Versts, or 163 Miles.	.. ..	Town formerly called Da-van, and afterwards changed to its present designation. Now a district town. Surrounded by a wall 3 miles in circumference. Four principal streets. Trade unimportant. Water from wells has a bitter salt taste.

ROUTE No. 1.—*continued.*

FROM AN-SIN-CHOW TO KHAMI.

From An-sin-chow to Khami there are two routes, (1) that followed by the Expedition and now described, and (2) that given in Appendix.

NAMES OF PLACES.	Distances in Versts.		Nature of Road, River, &c.	REMARKS.
	Intermediate.	Total.		
Sha-din-tsa .. .. (Wells).	30¾	..	At 1 mile ford the steppe river Bulun-Tsir; no difficulty to pass. Then across naked, infertile plains with stones and gravel.	These wells are in the midst of sand, overgrown with reeds. Water—bitter salt.
Siow-chen.. .. .. (Wells).	21¼	52	Road passes at first over somewhat sandy and gravelly soil, and then enters among hills, partly clayey, partly stony, of argillaceous slate and fragments of quartz.	At 8 miles are Dun-hua wells with brackish water. The water in Siao-chen Well is better but less abundant. Near at hand is grass. At 15 miles Hun-moo-sia Wells with abundant water; underfoot-grass better than in other places.
Bei-tsi-tsi .. .. (Wells).	47¼	99¼	Great part of road lies over open ground with hard clay soil.	Bei-tsi-tsi Wells—water drinkable.
Tsi-Tsi-tai-tsa .. .. (Wells).	41	140¼	Road hard and good; over a completely open plain, with low hills on horizon.	Water has odour of sulphuretted hydrogen; underfoot-grass poor.
Suan-chuan-tsa .. (Wells).	25¾	166	The road to Shuan-chuan-tsa and halfway to Paa-tsa-chuan passes amid stony hills, mostly bare, but with good grass in the valleys.	Suan-chuan-tsa and Lu-gan-guan-tsa are springs of good water; wood to be had.
Paa-tsia-chuan ..	36	202	.. ..	Station. Abundant spring. Snows of the Tian-shan seen in distance.
Vu-dun-o-tsi	33½	235½	.. ..	Station. Habitable dwelling near a small ravine, along which flows a stream. Little wood fuel. Underfoot-grass fair.

Mow-yer-kow .. .. (River).	52½	288	March over barren infertile country ..	Mow-yer-kow, a mountain stream in a deep crevice, containing excellent grass and low bush.
Lotow-tsin-tsa	53¼	341¼	Six miles from the halting-place an idol temple and several separate buildings; within 6 miles of Khami the ruins of the hamlet of Si-shi-li-tsin-tsa.	
Khami .. .. .. Lat. 42° 48′·4 Abs. height 3151 ft.	38¾	380 Versts, or 250 Miles.	An extensive meadow district, well watered; half-way to Khami is the important village of Huan-lu-chan.	Town of Khami consists of three quarters—two Chinese and one Mahomedan. The latter is the oldest, called Khamil, and was founded 300 years ago; the Chinese, Low-chen, 160 years, and Sin-chen the latest of all. All have walls of mud. Buildings half-destroyed, as Khami has been subject to three incursions from insurrectionary bands. 10,000 inhabitants, exclusive of a garrison of 4000 infantry and cavalry.

ROUTE FROM KHAMI TO BARKIOUL.

Nan-shan-kow ..	43	..	Barren, naked district as far as Nan-shan-kow. The ascent to the Tian-shan passes through the defile; movements of carts difficult. At the top of the pass (8980 ft.) is an inn and an idol temple. Here commences the descent, comparatively gentle, cut in zigzags in the steep northern slopes of the range. After 6 miles the station of	A station of several inns, situated at the entrance to the defile leading to the pass over the Tian-shan.

ROUTE No. 1.—*continued.*

ROUTE FROM KHAMI TO BARKIOUL.

NAMES OF PLACES.	Distances in Versts.		Nature of Road, River, &c.	REMARKS.
	Inter-mediate.	Total.		
Shi-vu-li-tsian-tsa ..	32	75	A tremendous march is made easy by an excellent road. Sometimes done in 2 days, resting for the night in the village 14 miles from Barkioul.	
Barkioul .. .. .. (Abs. height 6703 ft.)	55	130 Versts, or 85 Miles.	.. ..	Town of two parts, the Manchu and the Chinese, each surrounded by a wall. 6000 inhabitants and a garrison of 400 men. 100 shops. From Barkioul leads a road to Uliasutai, 26 days' march.

ROUTE FROM BARKIOUL TO GU-CHEN.

NAMES OF PLACES.	Inter-mediate.	Total.	Nature of Road, River, &c.	REMARKS.
			The entire road from Barkioul to Guchen is generally excellent. A well-kept post-road.	
Gu-kei-chuan-tsa ..	29¾	..	.. ..	Station.
Lo-bei-chuan-tsa ..	31½	61¼	A hard road along a mountain valley, in which lies Lake Barkioul; on the left the Tian-shan, on the right a low rocky ridge running E. and W. and having no special name.	
U-tu-shui	21	82¼		
Tsi-tsi-taitsa	28½	110¾		
Da-shi-tow	46¼	157		

Sanga-chuan-tsa ..	42½	199½	Although the road is a defile in the midst of rocky heights, it is perfectly fit for carriages. Near the last two stations it is necessary to be on guard against plundering gangs.	
Mu-lai-ho	34½	234	.. ..	The ruins of an extensive village.
Tsi-tai-sian	33¼	267¼	.. ..	Formerly the circle town, but administration now transferred to Gu-chen.
Gu-chen .. .. .. Lat. 44° 16′	35	302¼ Versts, or 200 Miles.	.. ..	This town was destroyed to the ground at the commencement of the late disturbances, but is now somewhat restored. Two suburbs—the Chinese and Manchu—about 600 families and a garrison of 6500. At 20 miles on the Chuguchak road is the military settlement of Tsi-mu-sa, where there are 8000 troops. Trade insignificant. 50 shops.

ROUTE FROM GU-CHEN TO THE ZAISAN POST.

From Gu-chen there are several roads.

(*a*) Post road to Khobdo: (1) Bei-da-tsow, (2) Huan-tsow-hoo, (3) Dzian-dziun-obo (branch to Bulun-tokhoi), (4) Yuan-hoo, (5) Olun-bulak, (6) Sibatu-urto (near Baitak-bogdo Mountains), (7) Tsogan-tungu-urto, (8) Shatsagai-urto (new branch to Bulun-tokhoi), (9) Naron, (10) Dabasu, (11) Botogol, (12) Su-chi, and (13) Khobdo.

(*b*) Post-road through Bulun-tokhoi to Chuguchak, (1) First eight marches along Khobdo road, (9) Bulgun, (10) Mali-kei, (11) Tsogan-khalu-su, (12) Tsingil-gol, (13) Tsakurtoi, (14) Dziak-obo, (15) Deren-deb-amo, (16) Den-ergei, (17) Kuku-modo, and (18) Bulun-tokhoi.

In all along this road 18 days' march, or about 265 miles of excellent road. From Bulun-tokhoi to the Zaisan Post is 175 miles, or 8 marches, viz., (1) Uran-bulak, (2) Bukhoto-kuduk, (3) Utu-bulak, (4) Uvatu, (5) Kham-t[illegible]e, (6) Matenia Idol-temple, (7) Tsogan-obo picquet,* (8) Zaisan Post.

There is another road from Gu-chen to Bulun-tokhoi, and much shorter than the last one. For the first three stations it leads along the Khobdo-Guchen road, then it strikes away and issues at the Tsakiurtai picquet on the Khobdo—Bulun-tokhoi road, viz., (1) Bai-da-tsow, (2) Huan-tsow-khu, (3) Dzian-dziun-obo, (4) Lama-dziangin-usu, (5) Hai-chiu-usu, (6) Hai-chin-yalbus-usu, (7) Tsakiurtai, &c. In all 13 days, but sometimes, to shorten, omit No. 3. Excellent road. No lack of water, forage, or fuel.

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* From the Tsogan-obo picquet the Chuguchak road enters the Bai-Murza Pass, by which it leads across the Tarbugatai Range and thence along the Emilia Valley.

ROUTE No. 1.—*continued.*

ROUTE FROM GU-CHEN TO THE ZAISAN POST.

NAMES OF PLACES.	Distances in Versts.		Nature of Road, River, &c.	REMARKS.
	Intermediate.	Total.		
Bi-tun-tso-chi	27¼	..	.. ..	Picquet, on the Khobdo-Guchen road. Spring-water, grass, wood and shelter.
Gurbun-tungut ..	26½	53¾	Here commences the desert known as the Gurbun-tungut, here naked and barren, here affording *saksaul* and grass; difficult in places for vehicles. In winter, want of water not felt, but other seasons more convenient for the march.	
Sepkiul-tai .. .. (Wells).	50	103¾	.. ..	Two large wells of good water; plenty of fuel; good underfoot-grass for camels, but poor for other cattle.
Hoshun-hulu-sutu-usu.	53	156¾	.. ..	Several pools of bitter-salt water, in a dried-up salt lake.
Haramali	33¾	190½	.. ..	Excellent spring in the rock; close by, is another spring, Lapsaringen-usu; fuel and grass all round.
Chanonzi-usu	36	226½	.. ..	Two contiguous wells; 2 miles from them is a third, Yeman-usu. Here ends the desert; a hard clay road begins, but the district is still poor in water.
Ulan-khoshu	48¼	274¾	.. ..	Good grass and fuel, but no water.
Tsia-khia	48½	323¼	.. ..	A small well; sufficient water for the men, but camels are not watered here when going from Zaisan, as a store has to be carried for the next march.

Sulga-usu	30¾	354	.. ..	Good abundant well.
Hulusutu-bulik ..	54	408½.	Here begin the haunts of the Torgoutes. The road shortly issues into the picturesque valley of the Kobu, where there is spring-water, grass in abundance, but no wood. The chi and argal become the fuel.	Spring.
Bain-dalai	25¼	433¾		Half-way is Yelzete well.
Yelzete (Aredina) ..	43	476¾	.. ..	Picquet.
Uvatu-Yeberte ..	21	497¾	.. ..	Village.
Kham-taste	30	527¾	.. ..	
Tso-gan-obo	65	592¾		
Zaisan Post	65	657¾ Versts or 440 Miles.		

Besides this carriage-road to Zaisan, there is another and shorter bridle-path. The road just described passes along the north border of the Gurbun-tungut desert, but the other along the southern, the present post-road to Chuguchak. It passes through the following points; (1) military village of Tsi-mu-sa; (2) San-tai; (3) Tsi-pi-guan, whence a branch to Urumtsi (80 miles from Guchen); (4) Si-guan; (5) Khai-tsi-otza; (6) Sin-tsui; (7) Khun-ta-ban-tan; (8) Sotziantsa, or Sozanza, 3 marches to the north of Manass, whither a road passes through Low-hu-di (in Khun-ta-ban-tan and Sotziantza large garrisons); (9) U-fin-di; (10) Sha-chen, whence a branch north to the valley of Kobu; (11) Ur-khu, called by the Kir[illegible]zes Ur-du; and (12) Si-kho (Shi-kho), whence to Chuguchak, 170 miles of carriage-road, and leading to the following points: Shara-usu, Olon-bulak, Bukgur, Utu, Kuldenen, Yamati, Tala-shara-khulu-su, Seter-modo, and Chuguchak. In all along this road about 400 miles.

Total from the Zaisan Post:—

To Gu-chen	440 miles.
„ Barkioul	640 „
„ Khami	726 „
„ An-sin-chow	980 „
To Tsia-yui-gua-ni (Great Wall) ..	1136 miles.
„ Lan-chow-foo	1634 „
„ Tsin-chow	1848 „
„ Han-chong-foo	2024 „
„ Hankow	2870 „

ROUTE No. 2.

FROM PEKIN TO SHI-TSIA-DIAR, THENCE BY WATER TO HANKOW.

NAMES OF PLACES.	Distances in Li.		Nature of Road, River, &c.	REMARKS.
	Inter-mediate.	Total.		
			Road for carriages all the way. It trends south-west through the towns of Lian-sian-sian and Tzoo-chow.	
Fei-chen	40	..	Road crosses River Hoang-ho, near this station, by a stone bridge of 13 arches. River here is rapid and about 150 yards wide. In spring it overflows banks for a mile each side. Road partly clay, partly sandy-clay, covered with small rubble.	Country on both sides of road cultivated and thickly populated. Gardens.
Lian-sian-sian ..	25	65	Between this place and Tsoo-chow, road crosses several rivers by stone bridges.	Town.
Tsoo-chow	65	130	.. ..	Town of several shops.
Wei-ho .. .. .. (River).	63	213	Road crosses River Wei-ho, 70 yards broad, 4 feet deep. Passage effected in boats.	
Bow-din-foo	137	330	From this place road trends at first south-west, then west through the towns of Din-chow, Sin-dow-sian, Chi-din-sian, Pehin-din-chow, and Show-yan-sian. Road for carriages; passes through a thickly populated and cultivated district.	Town with many shops.

Din-chow	150	480	Before reaching town, the River Din-chow-ho is crossed; in ordinary times fordable, but in spring, when water is full, there is a ferry.	Town.
Sin-low-sian	50	530	.. ..	Town.
Chen-din-foo	95	625	.. ..	Town.
Putow-ho .. .. .. (River).	8	633	Road crosses river about 1100 yards wide; in spring banks overflowed for a mile each side. At this season, passage partly by ford, partly by boat.	
Cho-lin-poo .. .. (Station).	22	655	Locality commences to be hilly, and at Khuai-lo-sian is mountainous. From this place to Tkhai-yuan-foo road is stony, with rather steep ascents and descents, although practicable for carriages.	Ground on slopes of hills mostly cultivated and thickly populated. Gardens and numerous trees.
Khuai-lo-sian	30	685	.. ..	Town.
Chin-din-sian	71	756	.. ..	Town.
Pehin-din-chow ..	135	891	.. ..	Large town. Many shops.
Show-yan-sian ..	95	986	.. ..	Town.
Tkhai-yuan-foo ..	179	1165	From this point road has a general direction south, then south-west, and afterwards south-east. To the station of Lian-tsun the road passes over a plain, thickly populated and everywhere cultivated.	Chief town of province San-si, surrounded by a wall 9 miles in circumference. Owing to its position on the main road leading from Central China to the north, to Kalgan and Gui-hua-chen, it is an important point among the trading centres of San-si. Many shops. From Tkhai-yuan-foo to Gui-hua-chen through Sin-chow, Jan-dsia-tsui, Chin-tsia-san, and Sin-dian-tsa, is 940 li.

ROUTE No. 2—*continued.*

FROM PEKIN TO SHI-TSIA-DIAR, THENCE BY WATER TO HANKOW.

NAMES OF PLACES.	Distances in Li.		Nature of Road, River, &c.	REMARKS.
	Inter-mediate.	Total.		
Sui-gow-sian	85	1250	.. ..	Town.
Tsi-sian	50	1300	.. ..	Town.
Lian-tsun	22	1322	Here road enters a defile among bare rocky hills; villages only found on road.	Station.
Si-tan	125	1447	Three miles from Si-tan, the road traverses a rather elevated mountain pass (Si-shan), and then descends gently over a light clay soil. Between the mountains large valleys, which are cultivated. Many of the streams on the road have stone bridges, but are mostly fordable.	Station.
Tsin-chow	60	1507	.. ..	Town.
Dzian-dzi-sian ..	190	1697	.. ..	Town.
Gow-pin-sin	90	1787	.. ..	Town.
Tsa-ja-foo	90	1877	.. ..	Town.
Tsin-hua-chen ..	140	2017	Road all the way to Shi-tsia-dian over level ground, of clay soil, and good for vehicles.	Station.

Sin-tsa-kow	147	2164	Road descends to River Hoang-ho, which flows here over a plain, and has a breadth of 2 miles. Passage by boats.	Statio n.
Chen-chow	45	2209	.. ..	Town.
Sian-sian	240	2449	.. ..	Town.
Ye-sian	65	2514	.. ..	Town.
Yui-chow	120	2634	.. ..	Town.
Shi-tsia-diar	60	2694	.. ..	Village. See Route No. 1.

ROUTE No. 3.

ROUTE FROM HAN-KOW TO FAN-CHEN.

Seo-dian	20	..	Road leads through meadow-lands ..	Inn.
Jia-kow-tsun	10	30	Cross river Dzia-geo-ho in boats. River 170 yards wide, navigable for several hundred li up-stream for ships of considerable burthen.	Large village.
Yan-dian	87	117	.. ..	Large village. To the west stretches a range of rocky conical heights which disappear after a time on the horizon. Locality becomes more intersected; in the low ground rice-fields, on the hills wheat. Soil; red-clay.
San-tsa-gan	45	162	.. ..	Small village.
Bai-su-pu-chen ..	15	177	Cross River Dzia-geo-ho in boats. This river is called locally Bei-sui-ho.	
De-an-foo	52	229	.. ..	Town.

ROUTE No. 3.—*continued.*

ROUTE FROM HAN-KOW TO FAN-CHEN.

NAMES OF PLACES.	Distances in Li.		Nature of Road, River, &c.	REMARKS.
	Intermediate.	Total.		
Seo-tsa-dian	57	286	.. ..	Inn.
Su-chow	73	359	.. ..	This town was at one time, before the incursions of the Taepings, wealthy and noted for its fine buildings, but little now remains of its former grandeur. Trade brisk. Many shops. 50,000 inhabitants. On the horizon are again seen the mountains.
Phin-chow	90	449	.. ..	This town was formerly called Tan-ne-chen. Situated in a cavity among craggy mountains, and surrounded with a wall 2 miles in circumference. The wall is strong and new. Town clean. Many shops.
Tsow-yan-sian ..	90	539	Cross River Sha-ho by bridge	Town situated on both banks of the Sha-ho. Left bank low and sandy; right bank strengthened with a granite wall 2 miles long. Circumference of town-wall 4 miles. Trade brisk. Large store-houses and shops. Inhabitants 20,000. Shops 700. River Sha-ho falls into Tan-ho.
Min-tsia-tsir	85	624	.. ..	Large village.
Lian-da-tsir	12	636	Thence by water to Fan-chen	Small village.
Lin-ker	20	656	.. ..	Large village at the mouth of the Tan-ho.
Fan-chen	15	671 Li, or 238 Miles.	.. ..	Town.

Route No. 4.

FROM PEKIN TO HAN-KOW, THROUGH THE PROVINCES OF CHI-LI, HO-NAN, AND HU-PEI.

It is a Carriage Road the whole Way.

Route No. 5.

FROM FAN-CHEN IN THE PROVINCE OF HU-PEI, ON THE RIVER HAN-KIANG, TO SI-AN-FOO, CHIEF TOWN IN THE PROVINCE OF SHEN-SI.

Siang-yang-foo	..	..	Journey as far as Hoo-tsun is made in boats, thence to Sian-foo by carriages.	On the opposite bank to Fan-chen.
Chai-dian-kiang	90	..		
Guan-hua-sian	60	150	.. ..	Change to small boats.
Sias-kiang-kow	30	180	.. ..	Road south west to Yun-an-foo.
Tan-tsi-kow	30	210		
Chen-kuan-poo-kow	80	290		
Che-chuan-sian	15	305	.. ..	Province of He-nan, district of Nan-yan-foo, Circle of Den-chow.
Mo-vei	40	345	.. ..	Surrounded on all sides by mountains.
Hu-tsun	30	375	Road for carriages commences here.	
Lin-si-low	60	435		
Tsin-shan	40	475		
Shan-nan-sian	50	525	.. ..	Province of Shen-si, district of Si-an-foo, Circle of Shan-chow.

Route No. 5.—*continued.*

FROM FAN-CHEN IN THE PROVINCE OF HU-PEI, ON THE RIVER HAN-KIANG, TO SI-AN-FOO, CHIEF TOWN IN THE PROVINCE OF SHEN-SI.

Names of Places.	Distances in Li.		Nature of Road, River, &c.	Remarks.
	Inter-mediate.	Total.		
Tsin-yu-ho	40	565		
U-chu-an	50	615		
Tow-hua-poo	80	695		
Bai-yan-dian	40	735		
Shan-chow	30	765		
Ma-veen	40	805		
Tsin-lin	50	855		
Da-shan-yuan	40	895		
Lan-tsiow	50	945		
Lan-tian-sian	40	985		
Li-tsun	40	1025 Li, or 365 Miles.		
Si-an-foo				

ROUTE No. 6.

ROUTE FROM SI-AN-FOO TO LAN-CHOW-FOO.

				The town of Si-an-foo was called in olden times Chan-an, and later Da-sin-chen. Was the capital during Sui Dynasty (A.D. 582–618); at that time were built the town walls. At present time Si-an-foo is chief administrative centre of the Shen-si Province. 350,000 inhabitants. Brisk trade. Distance to Pekin 2480 li. In the town a large arsenal, in which cannon and rifles are manufactured.
Sian-yan-sian	50	..	On nearing Sian-yan-sian the road passes over hills and spurs and sometimes over considerable heights, as a narrow winding track.	This town was capital during the dynasties of Tsin and Han. From this place branches a carriage-road to the province of Si-chuan.
Tsian-chow	40	90	From Tsian-chow to Yun-show-sian it becomes more level, but at the latter place it again winds over very intersected ground, with interminable ascents and descents over ranges, at times of considerable height. At the sides of the road small but well-leafed mulberry and date-trees. On the hill-sides numerous caverns in the rock, affording shelter to poor families.	Called Fin-tian in the time of the Tans.
Tsian-tsioun	50	140		
Yun-show-sian	40	180	.. ..	Town.
Tai-yui	40	220	.. ..	Village.
Bin-chow	30	250	.. ..	Town.
Tin-kow-chen	40	290	.. ..	Village.

ROUTE No. 6.—*continued.*

ROUTE FROM SI-AN-FOO TO LAN-CHOW-FOO.

NAMES OF PLACES.	Distances in Li.		Nature of Road, River, &c.	REMARKS.
	Intermediate.	Total.		
Chan-u-sian	40	330	.. ..	Town.
Va-yun-i	45	375	.. ..	Village on the borders of the Governments of Shen-si and Han-su.
Tsin-chow	60	435	Road difficult and mountainous	Town picturesquely situated near the mountains. In its west part flow two streams, Tsin and Jui, whose pellucid waters form a marked contrast to the yellow muddy stream Ve-i, into which they flow.
Bai-shui	40	475	.. ..	Village.
Pehin-lian-foo ..	70	545	.. ..	District town with high thick walls. On the south side runs the River Tsin. The Kun-tun-shan Mountains border the town on the south and west.
An-go	40	585	Road rises to mountains; ascents and descents become higher and steeper.	
Va-tin	50	635	20 li from the place is Ho-shan-po, at the foot of a mountain, called Mo-pan, over which the road passes. Passage difficult and fatiguing.	In the time of the Sun Dynasty this was an important fortress.
Mo-pan-shan	20	655	.. ..	Station.
Yan-tsia-lian .. .	50	705		
Lun-de-sian	50	755	.. ..	One of the most important Circle towns in the province of Han-su, but in appearance most unattractive.
Shen-li-poo	45	800	.. ..	Village.

Tsin-nin-chow ..	45	845	.. ..	Town.
Gow-tsia-poo	45	890	.. ..	Village.
Tsin-tsia	45	935	.. ..	Village.
Chai-tsiao-yu	40	975	Serpentining with endless ascents and descents along the gentle slopes of red-clay hills, the road crosses numerous brooks and streams; they are particularly frequent between the two last-named stations.	Village.
Hai-nin-sian	60	1035	From this point to Lan-chow-foo the locality is mountainous, and although the peaks and summits are lower, the road is more difficult than before, particularly during rain, when the clay soil renders movement nearly impossible. The barren places and the want of spring water announce the propinquity of the Gobi Desert; not until Lan-chow-foo is approached does the country become enlivened by the green of northern flora, with which the mountain slopes are covered.	Town.
Si-gun	60	1095	.. ..	Station.
Tsin-lian-shan	30	1125		
An-din-sian	30	1155	.. ..	Town.
Chen-goo	60	1215	.. ..	Village.
Cho-dow-lin	30	1245		
Tsin-shui	30	1275	.. ..	Village.
San-tsiu-chen	30	1305	.. ..	Village.
Chu-tsui	30	1335	.. ..	Village.
Dun-guan-poo	40	1375	.. ..	Village.
Lan-chow-foo	26	1401 Li, or 497 Miles.	.. ..	Town.

ROUTE No. 10.

ROUTE FROM AN-SIN-CHOW TO KHAMI, ACROSS THE GOBI.

NAMES OF PLACES.	Distances in Li. Inter-mediate.	Distances in Li. Total.	Nature of Road, River, &c.	REMARKS.
Bai-dun .. .. .. (Wells).	90	..	.. ..	Spring of bitter salt-water in the middle of a sandy desert. A little distance to the west are the Sin-Sin-tsa wells, where the water is better.
Hun-mo-yuan .. .. (Wells).	70	160	.. ..	Called also Hun-liu-tsia, in a cavity surrounded by rocky heights and sand-hills.
Da-tsuan .. .. .. (Wells).	80	240	.. ..	Great spring. 50 li along the road is another well, Siao-tsuan (little spring), but it is often dry.
Ma-lian-tsin .. .. (Wells).	70	310	Here branches a road to the south-west, leading to the town of Sha-chow.	In the mountains. At the 40th li is the well called Di-vo-poo.
Sin-sin-tsia .. .. (Wells).	80	390	For the first 10 li the road passes along a defile, called Gow-ho.	Situated is a cleft between two mountains, in which there is much micaceous rock. At the 50th li is the well, called Hun-mo-ho.
Sha-tsuan	60	450	.. ..	Spring situated in a sandy plain, from which it received its name (Sha = sand, tsuan = spring). Underfoot-grass better than on the other marches.
Ku-shui .. .. .. (Wells).	80	530	.. ..	Water very bitter salt. 30 li from the last halting-place are the He-da-tsin wells.
Ge-tsi-yan-dun .. (Wells).	120	650	.. ..	Half-way are the Hun-shan-dun wells. Station lies among sandy hills. Water good.
Chan-mo-shui	70	720	.. ..	Village. Perennial spring. Desert is passed, and the rich vegetation of the Khami oasis commences.

Huan-lu-gan	80	800	.. ..	Village. Half-way is the small village and spring of Si-shi-li-tsin-tsa.
Khami	80	880 Li, or 312 Miles.	.. ..	Town. Half-way is passed the station of Lui-tsin-dun.

ROUTE No. 11.

ROUTE FROM KHAMI THROUGH PI-CHAN AND TURFAN TO URUMTSI.

Pow-poo	90	..	.. ..	Village in ruins. There are three villages of this name, all of which were populated exclusively by turban-wearing people from Turkestan; the first is distant 30 li from Khami, the second 60 li, and the third 90 li. Vegetation rich.
Ya-tsi-tsuan	70	160	A barren march, commencing soon after leaving the halting-place.	Station.
Liao-dun	80	240	From this point branches a cross-road to Gu-chen.	Station. Plenty of vegetation and spring-water.
U-tun-vo	90	330	From this point the road lies over a waste for several marches.	Station. Formerly an inn.
San-tsian-fan	90	420	Road difficult in consequence of frequent ascents and descents. On the tops of the sandy hills is much stone.	Station.
Shi-san-dzian-fan ..	140	560	March dangerous, owing to the hurricanes which blow, raising clouds of sand and burying men and animals.	Miserable station in the steppe.

ROUTE No. 11.—*continued.*

ROUTE FROM KHAMI THROUGH PI-CHAN AND TURFAN TO URUMTSI.

NAMES OF PLACES.	Distances in Li.		Nature of Road, River, &c.	REMARKS.
	Inter-mediate.	Total.		
Ku-shui	80	640	.. ..	Station.
Tsi-keli-en-moo ..	60	700	.. ..	Both this and the preceding are miserable stations in the desert, but after passing them the character changes; vegetation appears and spring-water.
Sulu-tu	40	740	Road lies over plain	Station.
Pi-chan	50	790	.. ..	After every possible privation the abundance of the Pi-chan oasis makes a great impression. This town was called in olden times Liu-chan. The population is Mahomedan.
Lian-moo-tsin	60	850	.. ..	Village.
Shen-tsin-kow	60	910	Part of this march lies through a mountain defile.	
Turfan	90	1000	.. ..	The district of Turfan is fertile and rich. It was asserted in Khami that Turfan is compelled to acknowledge the authority of Yakub Khan, *i.e.*, for a quiet life, and in order to trade with Jetishaar. In Turfan, Yakub Khan has a collector of ziaket, Hekim-tiuria, but no troops; the town is the most eastern point subject to Yakub Khan. Road hence to Lob-nor is level and hard. 12 marches. Want in places of underfoot-grass and water. Lake abounds in fish,

Ken-ken	70	1070	After leaving Turfan the country becomes inhospitable, and Ken-ken is a wretched place.	Village.
Tow-dow-ho	70	1140	Road lies over sand and stones in the midst of hills and hillocks.	Village.
Bai-yan-ho	80	1220	.. ..	Village. The banks of the mountain stream which has to be crossed are grown with thickets of willows and firs.
Da-ban-chen	80	1300	On this march lies the pass of the Tian-shan, called Bogdo-ban. Shifting sands, so that horses and carts sink deep.	On the near horizon are seen the four snow-peaks of Bogdo-ola, rising to the clouds.
Chai-vo-poo	90	1390	A steep mountain has to be passed, at whose foot extends a considerable salt-lake. The vegetation on the route from Da-ban-chen is a luxuriant thick grass, growing to the height of a man.	Village.
Urumtsi	100	1490 Li, or 460 Miles.	.. ..	Town, called also Du-hua-chow, or Hun-mia-otze. Before the insurrection there were two towns: the Manchu on the west, and the Chinese on the east, separated by a river. Sandy hills, covered with wood, border the town. This town was brisk in trade before the insurrection. At the present time the town and vicinity are under the authority of Beyan-Akhun, from Shen-si. From Urumtsi to Gu-chen, where the main body of the Chinese forces is posted, is 80 miles.

ROUTE No. 12.

FROM URUMTSI TO KULDJA THROUGH MANASS.

NAMES OF PLACES.	Distances in Li.		Nature of Road, River, &c.	REMARKS.
	Inter-mediate.	Total.		
Chen-tsi-sian	100	..	40 li along road is village of Di-vo-poo..	Town called formerly Lo-ke-lun.
Dow-lu-tsao-gow ..	70	170	Half-way is village Siow-lu-tsao-gow ..	Village.
Tu-lu-li-ke .. .. (Tu-hulu).	80	250	After 20 li pass Fort Hu-tu-bi. Between Tu-hulu and Manass cross large river.	Village.
Manass	90	340	Three miles from Manass cross a deep river. Only fordable in early morning, when water is low.	In Chinese, Sui-lai-sian. Town never fell into hands of Yakub Khan. Before insurrection enjoyed great wealth.
Po-chen-tsi	40	380	.. ..	Village.
U-lan-usu	40	420	.. ..	Village.
An-tsi-hoi	100	520	.. ..	A large village. Half-way three small streams have to be crossed.
Kui-dun	70	590	Near Kui-dun, 10 branches of the same river have to be crossed; difficult.	Village.
Hur-hara-usu	60	650	.. ..	From this point leads a branch of the Chuguchak road.
Burkatsi	70	720	.. ..	Village.
Si-ke-shu	40	760	.. ..	Village.

Dun-mu-da	40	800	.. ..	Village.
Kur-tu	60	860	Cross large river; difficult	Village.
To-da-ke	50	910	Road from this point sandy, which continues to next station.	Village.
Sha-tsuan (Sandy spring).	80	990	Road sandy, and becomes more difficult after leaving Sha-tsuan.	Village.
Tsin-ho	60	1050	.. ..	Village.
To-li (Pai-fan).	60	1110	Fatiguing sandy march	Village.
Da-ho-yan	50	1160	.. ..	Village of Torgoutes.
U-tai	30	1190	.. ..	Village.
Si-tai	80	1270	.. ..	Village.
San-tai	80	1350	.. ..	Village surrounded with mountains.
Er-tai	60	1410	.. ..	At 40 li from night-halt, near Da-ban, commences properly the pass over the Tian-shan. The tops of the mountains bristle with thick forests, at the foot run mountain streams. The pass is paved. At the summit of the pass is a wayside inn (Tar-tsi-gow).
Tau-tai	50	1460	.. ..	Village.
Sui-din-chen	80	1540	.. ..	Town. Was considered the advanced bulwark of the Empire.
Hai-yuan-chen (Ili).	30	1570 Li, or 465 Miles.	.. ..	At 50 li is the Station of Siao-lu-tsa-gow.

F. C. H. CLARKE.

VIII.—*Journal of a Route from Jask to Bampūr.* By E. A. Floyer, Bengal Civil Service Uncov., Persian Gulf Telegraphs.

Towards the close of the year 1875, I began to feel that a hard and protracted service in the Persian Gulf had seriously injured my health. At last I fairly succumbed to more than two months' total loss of appetite and inability to sleep. I was reduced to but little over seven stone in weight, and under these circumstances I managed with considerable difficulty to obtain from Her Majesty's Government one month's sick leave. Total change of scene and climate was imperatively necessary. I went almost direct from the sick-bed to the camel-saddle and made the following journey. For eleven days I could take nothing but yolk of egg and camel's milk, after which I slowly improved, and eventually accomplished more than half the journey on foot, the better to use my instruments.

January 8th, 1876.—We marched from Jask Telegraph Station, N. 58° E., over a rocky barren plain. At 4 miles reached the village of Yekbūni, 20 huts. 6½ miles over a low salt-plain, covered with stunted bushes, brought us to Bahl, in a grassy, bushy hollow, inhabited at this season by Oushdān villagers. Thence our route led along the sandy sea-shore. At 9 miles rounded spur of Oushdān hills, which here project into the sea. Passed the Oushdān date-trees, a mile inland. At 12 miles, turned inland across barren saltpetre-ground, and through sand-hills. At 16 miles date-trees of Shārināh. There is here one good well. Proceeded through sand-hills, studded with petto jungle, and across the deep and dry Shārināh nullah. At 21 miles reached the date-trees of Yekdar; where there are a few huts, patches of wheat, and wells. Over salt-plains, thinly covered with rigid and bowart (*Salicorniæ*) jungles. At 25 miles entered trees which fringe Jagīn River; and at 28 miles the River Jagīn. Bed of river 500 yards wide, channel now about 300 yards; thick jungle in fertile silt on west side, from which at this place the river is receding. Huts scattered along bank; cows plentiful; sheep scarce; fodder, firewood and water abundant.

9th.—Halted, ill. In evening crossed the river and camped among zahren karrag (*Calotropis gigantæa*) trees. The river changing its course through the soft sand very rapidly, and heavy avalanches of sand falling every five minutes; many mosquitoes; small cotton plantations, staple very inferior.

10th.—Course E., through the fringe of trees. At 3 miles barren salt-plain and low sand-hills; at 18 miles fringe of trees; and at 20, Gabrig River. Dates, cotton, cows, and sheep.

11*th.*—Halted, ill. River-bed 500 yards wide; channel now 200 yards.

12*th.*—Course E. 10 points S. At 4 miles dry river-bed. Haimani date-trees; sand-hills. At 16 miles high banks of shingle and Sadaich River. Water, fodder, firewood abundant.

13*th* and 14*th.*—Violent storm; river impassable.

15*th.*—Crossed Sadaich River. Bed about 400 yards, channel 150 yards. Kept to south of hills, over low sandy plain. At 11 miles, Sūrag. About 200 acres of wheat and barley; wells, fodder, water, and firewood.

16*th.*—Course E. 7 points S., over high shingly banks; and at 1¼ mile low broken hills. At 16 miles Kāshī; fodder and firewood; water in wells 1½ mile to north.

17*th.*—Course N. 10° W., heading for Karwān district. At 3 miles crossed small Kāshi nullah, skirting large area of low salt mud-hills, containing veins of gypsum, called shūrs, covered with bright yellow sandstone. At 19 miles, high shūrs and belt of trees. Going N.N.W., crossed Karwān River four times, and at 23 miles reached Jowdar hills. Winding amongst these, crossed river twice more. Bed full of pīsh. At 26 miles Pūgūnzī. Bed of river here 300 yards; channels numerous and small. Water, fodder, and firewood abundant.

18*th.*—Course N.N.W. Marched up right bank of Karwān River, and at 6 miles reached a range of barren hills. Rounded the north-west end, and entered Tenk River. At 9 miles left it, ascending right bank; left bank high cliffs. Re-entered Tenk River, and at 11 miles branched to right, down Poolāia nullah, heading for Kohi Sihran. At 15 miles ascended very steep defile, under brow of Sīhran, and made steep descent into Gari River. After much rough travelling, at 19 miles struck Sartāpi River, and camped among low shūrs of various colours, from chocolate to dull yellow. Much gīsh (*Nerium oleandrum*), poison for camels; fodder; firewood scarce; water in pools in river-bed, here about 100 yards wide.

19*th.*—Followed Sartāpi River between low shūrs, backed by hills about 800 feet high, and at 2 miles entered high shingly plateau. To the W.S.W. is the Gou Koh, 6400 feet high, and whence flows the (Gou-rīg) Gabrig River. To our right the almost parallel ranges of Ligandi and Sharīki abut upon the path. At 4 miles, rounded north-west bluff of Ligandi, and kept on for Sharīki. These are two striking precipitous ranges, about 1600 feet high, and impassable even for a man on foot, except in a very few places. They converge sharply towards the south-east, and a bitterly cold wind came down the gorge. Passed a hut and a flock of sheep. At 11 miles passed between a hog-backed hill and the north-west end of Sharīki, which is marked by a curious castellated rock. Since entering on plain, path had been a gradual ascent, and when entering the Jamki, or wide pass, we got tolerably open view. Mountains of every colour, from chocolate to sky-blue. Leaving the pass, we entered on a slight descent, the ground, often white with salt, producing very luxuriant pīsh, and occasional agrich. At 13 miles suddenly broke upon magnificent view of Gidīch Valley.

This valley was here quite straight for 4 or 5 miles; it was about a mile broad from top to top, the hills sloping gradually down to the broad belts of tamarisk-bushes, between which ran the smooth dark-blue river, at this time about 60 yards broad, with an average depth of 2 feet and a velocity of about 5 miles an hour. The river-bed was, in places, large shingle, and partly vertical strata of hard blue clay.

To the right of our crossing-place the river rushes down a natural weir, formed by the vertical projection of a stratum of this clay, which is almost of the consistency of rock. This river is said to be a perennial tributary of the Rapsh, which reaches the sea some miles south-east. At 14 miles crossed Gidīch River, and turned east through steep shūrs and sandstone hills. At 16 miles, course north over generally level, broken rocky plain, interspersed with shūrs containing veins of gypsum 6 inches thick and very pure, not fibrous as usual. In blue distance Band-i-Nīlag, through which Fanōch Pass is cut.

At 17 miles crossed unimportant-looking nullah, Shīrīn Kandag, said to reach the sea at Sūrag in rainy season, and leaving Mīrōi hill on our left, with large flock of fine sheep cropping stunted lorti (*Taverniera spartæa*) on its sides, we passed on over rough rocky plain. At 20 miles entered Hūrdin Valley, which was in many parts white with salt. Pīsh-fronds 4 feet long; road rough and intersected by many blackish, bitter-watered creeks. At 23 miles struck the Pāsgā Valley opposite a large rectangular rock, balanced on the top of the cliff on the other side, and called Kunār Kunū. Pāsgā Valley is wider than Gidīch, but hills on either side low, and river here divided into three channels, all hidden in tamarisk and dense kāsh and kik (*Gynaxeum argenteum*). Camped here, the usual halting-place for caravans from Bint to the sea-coast. Much jūr or gīsh (oleander, poisonous), water, fodder, firewood abundant. Met here a caravan from Bint to Sadaich; nine camels, each carrying ten bags of dates. The Pāsgā is a perennial tributary to the Rapsh.

20*th*.—Followed river-bed, which, soon after starting, narrowed to about half a mile. On either side broad, low hills, and shūrs; bed full of gaz (tamarisk), pīsh (*Chamærops Ritchiana*), and long kāsh. At 1½ mile struck the Kahīr Gāzi nullah, strata remarkably regular and perpendicular; alternately 6 inches of shūr mud, and 4 of chocolate-coloured sandstone. Entering the Kalkīa District we followed small stream-bed for short distance, and left it on right bank; saw here some small brown birds, the first animal life seen since entering the hills. At 3 miles entered Pāsgā Valley. View magnificent; immense boulders of dark green, crimson, and purple, intersected with a network of white wavy veins. Hills here of every colour of the rainbow. Crossed Pāsgā River, and rounding foot of right-hand Kalkīa Hill, recrossed river; passed two large snow-white boulders in mid-stream; river here 20 feet wide, with average depth of 1½ foot. Passing up steep defile, called Rīdagōn Darag, we entered a sea of hills of most rich and variegated colours. At 4 miles crossed small Hādar River, on the banks of which are said to be many small settlements; strata here perpendicular and wavy, as if matērial had been moved about when half-consolidated. At 6 miles passed between two of four conical flint hills, called Katal Janjīn; one peak, a rich blood colour; heading for high hog-backed hill, Siga Pōsht; many curious tall conical peaks scattered about. Rounding end of Siga Pōsht we entered wide valley full of trees, and crossed the Pāsgā River near where the Siga Pōsht stream joins it. Pāsgā river-bed, a quarter of a mile wide, contained small walled patch of wheat and four or five date-trees; owners probably tending their sheep in some place where the spring vegetation was more abundant.

Followed Siga Pōsht stream 1 mile, then Gari River, bed white with salt, and at 21 miles reached settlement, Gari Darāp (Gari River hollow). River dammed, and water led in canals, through fields of beans, coarse tobacco, wheat, and date-groves. River is perennial, and contains much water-weed; siriks, or upper-storied huts, on tops of all surrounding hills, indicate many mosquitoes. Settlement contains five respectable families, of whom chief is 'Abd-al-Kādir, elder brother of Mīr Hāji of Bint, a corpulent, unhealthy man, who has resigned his chiefship to rusticate here. Here good soil replaces the shūr strata, and the layers are 8 inches thick to 2 inches of sandstone. Country still hilly, but more open than before, and villages scattered about. Passed up broad, shingly river-bed, leaving village of Daskīr on our left, Rāh Gudār on our right, and heading for Tarampōg. River very rapid, 50 feet broad, with average depth of 1 foot, said to originate in Band-i-Nīlag, and is an almost perennial tributary of the Rapsh.

Passed between villages of Tarampōg and Rendag; all around are date and other trees, behind which are barren hills. At 24 miles a Fanōch road strikes off to the left, past the Umkān date-groves: all date-groves in most slovenly condition; a very small outlay would increase the produce by one quarter. At 28 miles crossed the small River Zangūtān, and camped under small barren hill; weather gloomy and threatening; fodder, water plenty.

21*st.*—Inky clouds and steady, pouring rain; marched 3 miles into Bint, and camped on shingly common to west of fort. Bint is a large village of about 700 inhabitants, placed in the centre of a long line of date-trees, which fringe the western bank of the Khōr-i-Bint. The people are supported mainly by their dates and the produce of about 100 acres of grain crops, in the following order of their respective areas—English horse-beans, wheat, rice, barley; a small quantity of infamous tobacco is grown; soil a stiff blue clay, requiring constant manure, which is collected in the spaces between the houses, which are laid down in grass-roots and rice-straw for the purpose. Manufactures: a coarse white cloth from cotton grown near, shoes, belts, bullet-pouches, gauzy handkerchiefs for women, badly dyed red and green, and embroidered with floss silk brought from Maskat; and elaborately embroidered skull-caps. Couzas also are made from the blue clay of the Gidīch. None of these things are of any value out of their own country, except the skull-caps, which were purchased eagerly by our camel-men at a dollar each. Governor, Mīr Hāji, an energetic, handsome young scion of an ancient family. Slaves numerous and well cared for; they do all the field labour; no "green" slaves, English operations on the coast having almost put a stop to importation, and doubled the price of those now in the country. Religion nominally Sunni, but really Sūfi. Good masjid and school; latter attended by twelve youths, who pay ten dollars for being taught the Kurān or Hāfiz.

By aneroid the approximate elevation is 2000 feet above the sea; the climate is almost English, but the sun at noon is very powerful, and there are constant showers of rain. Mīr Hāji is said to pay the Persian Government 2000 tomāns annually through the Khān of Kassarkand. There is no regular trade: after an unusually good year, sheep and ghee are sometimes sent to Maskat and Bandar Abbas in exchange for floss silk and piece goods. The ornaments on the walls of Mīr's house are English bottles in camel's-hair network and Russian brass rosewater vases; his hookah is made from an English cut-glass decanter.

The nucleus of the village consists of about seventy oblong, flat-roofed, strongly-built mud-houses, perched on the sides of a steep hill, which is crowned by the large mud-fort. To the west is a ruined natural wall, formed by a stratum of hard yellow sandstone projecting from the surface. 100 yards beyond this is an advanced tower 40 feet high.

The houses scattered amongst the date-groves are for the most part circular. Average diameter, 20 feet; height, 7 feet; covered by a strong, light dome, 10 feet high, formed of a framework of date-sticks, thatched with pīsh covered with rope-netting. Camels plentiful, larger than coast camels, but not proportionately more enduring, owing to their more succulent food. Donkeys few and dear, imported from Oman; one horse, sheep poor, cows few. Fodder and firewood 4 miles distant.

The general topics of conversation were the tyranny of the Persians, blood feuds, and confident expectation that the English are shortly going to take the country.

Money—dollars, rupees, krans, half-krans, and floss silk. The irrigation arrangements are bad, some crops withering while others are drowning. The river is led into four fields per day, and each landowner has so many "turns," according to his rank, not according to his acreage.

22nd.—Halted.

23rd.—Left tent, baggage, &c., in charge of Mīr Hāji, and having obtained three enormous camels, started at noon for Fanōch, accompanied by Balūch servant, and two camel-men. Piercing north-east wind and driving sleet. We cut off a large bend of the river through low barren hills, and then followed broad shingly river-bed, studded with gaz. Many heaps of dead leaves, to be used like the kik grass-roots for collecting manure in the streets. At 15 miles compelled to camp, being unable to drive men any further on account of excessive cold. Fodder, firewood, and water, abundant throughout march. Gaz rōghan commences here, from the fruit of which, after a dry season, a valuable oil is extracted. Much trouble and even danger with camels, who were all males and mad with "mast."

24th.—Morning icy cold. With much difficulty got men to proceed. Distributed blankets, spare shirts, &c.

Our route lay up the bed of the river, sometimes in the stream, sometimes along banks of sand and shingle. At 5 miles we fairly entered the pass at Girī, a huge blood-red rock, under which was a pale-blue pool, said to be very deep. The pass was very full of water rushing very rapidly, and the bed, which is the only path, begins to be blocked with huge boulders.

At 8 miles the scenery about the Kelāt-i-Zangi is wildly beautiful. A confusion of hills and rocks of every imaginable colour: bright red, burnt umber, soft crimson velvet, purple velvet, snowy-white, purpled-steel, and all shades of green from olive-black to emerald. These were the main colours, and they were brought out by the rain with a richness and brilliancy which defies description.

At 10 miles the river completely fills its bed; on each side rise steep hills: so we progress generally against the rushing stream, about 3 feet deep; that is, between and over the huge boulders which fill it, and round which the eddies excavate disagreeably deep and sudden hollows; marks of high water are apparent at 15 feet above the present level.

At 15 miles entered upon a straight piece a quarter of a mile long, which was very difficult, the whole valley being filled up with enormous rounded white boulders. At 18 miles we passed through the Band-i-Nīlag range, a perpendicular cliff on our left, and lofty, broken cliffs on our right. The Band-i-Nīlag is here the backbone of the whole Mekran range, and its summit is approximately 3500 feet above the sea. Emerging from the dark mouth of the pass, we skirted the Fanōch date-trees on our right. A short mile to the right, remains of a large fort, said to have been destroyed by the Afghāns. From the north, slightly to left, comes a tributary to the Bint River, about one-fourth the latter's volume. Rounding a high, dark-purple bluff on the right, on which was a small but commandingly placed mud fortification, we ascended a steep hill, covered with circular thatched huts, looking like English wheatstacks, in one of which we took up our quarters.

On most points, what has been written of Bint will apply to Fanōch. The main differences are as follows:—Fanōch wheat and dates are of superior quality, and pay for exportation in small quantities. Fanōch is on the road between Bashkurd and Bampūr, between which a small trade goes on, Mohterabad sending tobacco in exchange for grain. Owing to the difficult nature of all the roads from Fanōch, the camels there are of great size, and anecdotes of burdens carried by Fanōch camels are rife. There is a more Persian element in the place, the muezzin crying "Biro namāz," and the religion, though nominally Sunnī, being adulterated Sūfī with a strong predilection for Ali. The chief, Chakar Khan, is a brother of Hussein Khan, of Kasserkand, and a friendly relation of Mīr Hāji. He has no fort.

Found here admirable sheets made in Dizak from Dizak cotton, which is said to be so fine that a single seed yields a handful. The cold here, where it freezes nearly every night in the winter, entails the use of worsted gloves and enormous list socks, which are brought from Kermān.

Fanōch is the extreme northern limit for the general employment of donkeys, excepting among the Lāshāri.

We saw but few slaves, most of them apparently living on their work in the fields. There was only one Persian slave. The people spoke of Kermān much as English peasants speak of London.

Strong camels moderately loaded, and attended by experienced men, traverse the Fanōch Pass at this season. Donkeys rarely attempt it. Men on foot must strip to the armpits. In the summer the pass is easy, but is always impracticable for wheeled carriages.

25th.—Cold extreme. Started half an hour after sunrise, accompanied by about twenty men and boys mounted on donkeys, provided with large mat bags for bringing in grass-roots for manure, and firewood. Course north, over broken, rocky, and shingly plain. Passed Pāi Duldul-i-Ali. At 2 miles we crossed broad nullah with small brackish stream, full of pīzg, a soft rush, used for sleeping-mats.

At 8 miles we entered a broad dry nullah, full of pīsh. This is the northern limit of pīsh. At 11 miles we cleared the hills; before us was a desert which, owing to mirage, exactly resembled the sea. Across this, in the blue distance, were the snow-covered Bāsmān and Tōrīk ranges. Our course hence was east, along the southern boundary of the desert, over flat sand and red gravel, from the surface of which occasionally protruded a huge flinty red-and-white boulder. The whole was thinly studded with golden pīr-trees, vivid green agrich-bushes, trāt and ishwarak. At 22 miles crossed the broad dry Mūrgh nullah. At 25 miles reached Mask Hūtān. Passed through the town, crossing a broad river-bed and shallow channel of 20 yards width, and camped among low, rocky hills on eastern side. Fodder and firewood scarce; water abundant. Mask Hūtān is a village of about 500 inhabitants, situated near the western end of a strip of date-trees about 7 miles long, which fringes the southern bank of a small perennial stream. This river here comes from the desert to the northward, and flows south-east, having a sandy bed 500 yards wide, with a channel at this season of 20 yards in width, and an average depth of 1 foot. The soil is good, but there is not much of it. I was told that rice, wheat, and beans were grown, but saw none. The Governor is Hussein Khan, a relation of Mīr Hūti, the Chief of the Hūt tribe, who lives at Pīp. The people appeared to be of three classes: sallow Persians, wild-looking Lāshāris, and a third class of square-faced, beardless men, in Persian dress. The knife worn here is called a kāch (abbreviation of kāh chīn, grass-cutter). A thick piece of wood split down to within an inch of one end is the handle. The blade is 1½ foot long, pivoted in the centre, having one half sharp and the other half made into a saw. The sheath is generally made of matting. The fort is much dilapidated and the town very dirty. Whereas Fanōch and Bint resembled English cowyards, the manure in Mask Hūtan had so much the upper hand of the grass-roots and straw, that the place resembled a pigstye. The grass-roots and firewood, and all burdens, are carried on cows when they can be afforded, otherwise on men's backs; and we saw little children carrying extraordinary loads of firewood. Engaged an old man to take us from here to Bampūr and back in five days for one rupee; he to run all the way, and to provide his own food. He wore a coarse but strong woollen blanket, of his own manufacture. The river-water is drinkable, but brackish.

26th.—Started an hour and a half before sunrise. Course north-east. As on leaving Fanōch, we had an escort of men and boys starting for grass-roots and firewood. Here, however, they were mounted on cows, whose stupidity, probably, assisted to produce a difference between the dialects of the two places. Route over hard, gravelly, and sandy plains, thinly covered with jungle. At 3 miles crossed the small River Jeh, flowing eastward. To the east, at about 3 miles' distance, were the low ranges Baggink Gasumāl and Band-i-lāgi. Overtook caravan of nine donkeys carrying tobacco from Mohterabad to Bampūr.

At 8 miles, saw in blue distance to eastward the Lāshāri Hills, and at 11 miles reached the miserably desolate date-groves of Marrī. About 200 date-trees, mostly dead or dying, leaned in all directions over a barren tract covered thickly with a white efflorescence, having the taste of stale soda-water. Many low mounds were scattered about, from the centres of which trickled small black streams of very clear, bitter water. The owners of these trees only visited them in the fruit season, and we could neither get information nor form conjecture as to the cause of their wretched condition. The bitter springs did not appear to have broken out recently. Fresh water is obtained here by scraping a hole in the wet black sand. The water that filters through into it is drinkable for about two days, and here we filled water-skins for the desert march. Much difficulty to get the camels to drink this water; but a large pack of sand-grouse flocked to the hole the moment we left it. Another date-grove, called Dariabad, was visible about 4 miles to the west. Said to contain wells and no fixed inhabitants.

At 15 miles we passed between two low sandstone hills, Dīrbūm and Kahnūk, and thence entered a sea of enormous hills of loose sand, very thinly studded with, at this season, leafless petto-bushes. At 19 miles crossed the low Jang Jā Hills, huge rounded mounds of perpendicular strata, alternately of brown sandstone and earth, which were so regular as to give the hills exactly the appearance of ploughed land. The white siggichk bunches, growing only in the earth strata, looked like a bad crop.

The two camel-men, who were together on the big camel, here stopped behind to cut lorti, the favourite camel-fodder; and the guide, anxious to insure his rupee, here proposed to me privately to take advantage of their ignorance to pass Lūchān Chāh, the ordinary stage, and to make at once for Geshkōk. Assented gladly, and we pressed on as hard as we could over the heavy sand. At 27 miles entered a broad, dry nullah, and followed it for a mile, leaving Lūchān Chāh on our right.

It was a fine, cold, bright day, and the camels were in first-rate order; we made very good travelling for 49 miles, as nearly as I could estimate, and just at sunset ascended a lofty sandhill, and saw the white Bampūr fort in the far north-east. Here we camped, the men having mutinied three times, and the camels giving signs of exhaustion. It was pitch-dark before we had a fire; but we had brought our water and food, and cut fodder on the way. I pacified the camel-men with a leg of mutton and "chaff," but they knew we were somewhere near Geshkōk.

Excepting where we had gone aside to avoid Lūchān Chāh, the whole of to-day's route had been along a well-trodden path over the sandhills.

27th.—After an intensely cold night, started an hour before sunrise. Slight frost, whitening the scanty spring vegetation which grew round the roots of and under the shade of each leafless petto-bush. After 3 miles of heavy sandhills we reached Geshkōk, a pool of rainwater under a small hill, the occasional resort of wandering Lāshārīs, and the general camping-place for caravans going south from Bampūr; the pool is said to hold water three or four months.

At 5 miles the sandhills end, and the road divides, one path going north-east to Bampūr, and the other north to Kāsimabad. From a high sandhill on boundary, saw a broad belt of trees running through desert, in which the forts of Kāsimabad and Bampūr could be distinguished, the former bearing north, the latter 70° E. Road hence over stony hills and shingly plains. At 11 miles the road from Kāsimabad to Isfaka crosses ours. Met caravan, fourteen donkeys carrying grain from Bampūr. At 16 miles entered the belt of trees, which consisted mostly of three kinds of tamarisk and kahīr.

At 17 miles crossed a shallow river, about 40 yards wide, with average depth of 1 foot. Course now nearly east through ground in process of cultivation, and intersected by numerous, broad, and well-kept-up irrigation canals. At 21 miles descended steep path into Bampūr fort, and received quarters from the Governor's major-domo. The good Persian spoken here was very grateful after so much of the slovenly Belūch dialect.

The fort and small military camp at Bampūr are about 4 miles from the village, which consists of about 200 rice-straw huts, straggling along the northern bank of the river. The inhabitants of these huts are chiefly employed in the cultivation of the land between their village and the fort, consisting of nearly 1000 acres. The seed is sold to the farmers by the Persian Governor, who, at harvest-time, exacts a liberal interest. The crops are grain and rice. The canals for irrigation are 4 feet wide and 3 feet deep, and are mostly in good repair. The trees are all recklessly mutilated for firewood. Both the soil and water are very good. The only manufactures we could hear of were leather shoes, like those in Bint. Everything seemed brought from Kermān. Almost the only draught animals were cows; neither camels nor donkeys appeared, and sheep were very scarce. The people speak both Persian and Belūchi.

The fort is in remarkably good preservation, and is manned by 200 artillerymen under the Commandant, while 100 infantry are under the orders of the Persian Governor, Mirza Hussein Khan. The men seemed well cared for and well fed, though we heard many complaints of pay in arrears, and, among the artillerymen, of the hardship of having to keep horses without fodder. There are nine cannon of from 6 to 3 lb. calibre, with horses for three of them. Lieutenant Pottinger describes the hill on which the fort is built as hollow, but I could not obtain permission to enter it, and observed that even my sketching it from outside caused some uneasiness. I saw no military display whatever, though I had heard at Fanōoh of a military band. The soldiers were armed with Enfield muskets, and their English powder was the cause of great envy, the Belūchīs being passionately fond of powder.

Mirza Hussein Khan is subordinate to the Wakīl-al-Mulk at Kermān. He takes tribute from all the Belūchīs as far as Kasserkand, and appeared anxious to convey the impression that he held undisputed mastery over all Beluchistan. He appears to have made Mīr Hūti, for the present, a sort of subordinate ally, and used him to pacify quarrels and collect revenue. The Khan gives out seed to the Belūchīs, and expects a large return, whatever the season. The Khan wrote me a firman to the people I might meet in the way, to give me everything I might require, but I destroyed it in the presence of my camel-men, pointing out that after the ample hospitality I had received throughout my journey it would be ungrateful to use it. The Belūchīs have a very strong feeling against the Persians.

28*th*.—Left Bampūr at noon for Kāsimabad; course west through large tamarisk and kahīr trees. At 10 miles entered quantity of zahren karrag trees, and arrived at the ruined fort of Kāsimabad. But few people about, the place suffering from a very severe attack of small-pox, which disease had just emptied the house provided for us by the head-man.

Violent north wind from Bāsmān Mountains, and cold during night intense. Cows and donkeys numerous here. Men all wearing handsome cloaks from Rūdbār.

29th.—Morning freezing hard; atmosphere thick, dull white. Course nearly south for Geshkōk, over barren sand. Pool at Geshkōk covered with thin ice, and it froze hard till 2 P.M.

At 28 miles camped at Lūchān Chāh after very fast ride. Here there is a camp of Lāshāris, the Bedawīn of Belūchistan, who sold us a sheep, and assisted at a wild debauch on it and buttermilk. Men all carry a spinning-machine stuck in their girdles, opposite the "kāch," forming a contrast to their wild looks and fierce conversation. They often reach Chābar in their wanderings; they make goat's-hair cloaks, and subsist entirely on the produce of their flocks.

Water here in wells, fodder scarce, and only adapted for camels accustomed to it; firewood scarce. The wells are the only things that mark Lūchān Chāh from any other part of the sandhills.

30th.—Started at sunrise; passed flock; 600 small sheep and goats; overtook caravan, men of which said to be Lāshāris, though looking like up-country persons; women wearing male clothing; ten minute donkeys carrying goat's-hair tents, and a few fowls spread over 5 miles of desert.

Passed through Mask Hūtān, and camped 5 miles beyond it, carrying water with us. Heavy snow-storm imminent.

31st.—At sunrise it was snowing and freezing hard. A violent north wind blew, and the windward sides of trees and stones were thick with snow. I shivered with cold, though clothed in flannel shirt, woollen "Cardigan" waistcoat, pilot jacket, flannel drawers, moleskins, and knee-boots. With the utmost difficulty we got our men through to Fanoch. One man left behind rejoined us afterwards.

Feb. 1st.—Waterskins frozen like stones, and icicles 2 feet long hanging from them. Walked through date-groves to mouth of pass, over which hangs a steamy cloud from numerous warm springs. Pass easier to descend than to ascend, the difficult parts then being passed when the animals are fresh. The colours of the hills lost much of their former brilliancy by being dry. Towards evening reached my camp at Bint.

2nd.—Halted.

3rd.—Left at 9 A.M. for Pāsgā. Followed our former route, and arrived at camp at sunset.

4th.—Started at sunrise. At 3 miles road divided into three; took the most westerly; course nearly south. At 6 miles entered fine valley of Gidīch River; followed this for a mile, and seeing two huts obtained directions for route. Left bed of Gidīch and crossed barren shingly plain; Band-i-Sharīki visible about 8 miles to east. Nineteen miles over this plain sighted Sihrān-i-Koh, and at 28 miles entered small brackish Surīni River; followed bed of this a mile, and entered Sadaich River, and at 30 miles camped in its bed. Water, fodder, firewood, abundant and excellent. This is one of the general halting-places for caravans taking the Sadaich route up-country from the coast. Overtook caravan of six camels, carrying sixty bags of dates from Bint for sale on the coast.

5th.—Course south-west, and with the exception of three or four ascents up the steep cliff on one side or the other, to cut off a larger bend than usual, our march to-day was down the bed of the River Sadaich. The river here is fully twice as large as when it reaches the sea, after passing through the sand strip along the coast. Route sometimes through rich spring grass 2 feet high, sometimes over rough shingle, thickly studded with gaz, and sometimes down the broad shallow river itself. The bed was about 1½ mile wide, and the river ran pretty regularly from side to side, making regular rounded corners. Each corner, or "kuch," was well treed and grassy, and would have made an admirable camping-place for any one bringing their own food.

At 1 mile left Sadaich Valley, up steep defile on right bank; course west for 2 miles over shingly plain; down defile into valley which, from top of cliff, looked beautifully wooded; crossed, and followed south bank for 3 miles; then up steep path over a very high kuch, and crossed river twice in quick succession. Fourth crossing dangerous, unless made in right place; ledge of rock slopes up under surface of water from east bank to middle of stream, and ends abruptly in 7 feet of water. Fifth crossing, river runs right across bed. High hills on both sides.

After sixth crossing, narrow pass, high shūrs on north, and sandstone and shūrs on south.

Eighth crossing, fronting long saw-backed range, surmised to be the Sūrag Hills.

After tenth crossing ascended steep defile on north bank, and found a native, hunting mountain-sheep, and engaged him as guide. Two miles over low hills, and again entered valley; crossed river and turned up it 400 yards, and entered shūrs. Wound amongst them for 2 miles, and again entered Sadaich Valley and camped. Water, firewood, fodder, abundant and excellent.

6th.—Crossed the river and made south course for south end of Gurānī Hills. After thirteenth crossing, our course was westerly, through rich spring grass. At 3 miles ascended the steep right bank, and got a grand view of the broad blue river winding through grassy, well-wooded bottom, hemmed in on both sides by fine hills. Overtook two men with camels carrying pish to the coast. After parting from them, they took the Sadaich route to the left, we searching for the Gabrig route with indistinct instructions. Crossed a small river, probably the Haimini, and skirted the base of some lofty hills to the west of us. At 15 miles, entered intricate shūrs; at 18 miles, passed a small oasis containing some trees and a hut, and, by instructions, crossed a steep defile, and fairly emerged from the hills and camped. Water 2 miles north, up dry nullah; fodder, sheep, and fire-wood, plentiful.

We are just under the Huni Mountains. To-day's route was exceedingly rough travelling for camels' feet, and there is no vestige of a track after parting with the Sadaich route, along which we had followed tracks of Persian gipsies.

7th.—We marched over a sandy plain across the Gabrig River, and rejoined our former route. At 15 miles camped. Started as soon as the moon was up, and, riding steadily, at 52 miles reached Jask.

IX.—*Notes on Bolivia, to accompany Original Maps.** By GEORGE CHAWORTH MUSTERS, Retired Commander, R.N.

[*Read*, November 26th, 1877.]

ONE of the least known of the South American States which were formed after the final overthrow of the Spanish Vice-regal Government in South America, is the Republic of Bolivia, occupying a vast and irregular area in the interior of the continent, which, previous to the year 1825, was known as Upper Peru. The Republic of Peru borders it on the west, cutting it off from the Pacific seaboard, excepting a small strip of coast territory through which the Tropic of Capricorn passes. The Empire of Brazil, to the north and east; the Argentine Confederation to the south; and Chile to the south-west, are its conterminous neighbours, although the boundaries, passing through much unexplored and almost unknown territory, cannot be laid down with precision. Thus it occupies the centre, or, as may be termed, the heart of the great continent of South America, and includes roughly 13° of longitude and 16° of latitude. The most important territories of the Republic are comprised in the Altaplanicie, or table-land of the Andes, and the spurs and valleys of the Eastern Corderilla. The immense outlying savannahs and forest-land to the north and east are chiefly occupied by wild tribes of Indians, and await the progress of the future for development. After some time spent on the Pacific coast, during which I made a journey from Valdivia to the River Limay, in Patagonia, with a view of reaching the Atlantic coast by a new route, I was induced to visit, and ultimately reside in, the city of Sucre, the capital of Bolivia. Naturally desiring exact information as to the geography and topography of my new residence, I speedily discovered that the existing maps of the country were exceedingly inaccurate and incomplete. At the same time I was fortunate enough to meet with an able civil engineer, Mr. Minchin, holding an appointment under the State Government, and Captain Cilley, an officer of the United States Navy, who was interested in the exploration of the eastern frontier territory. We conferred together, and determined, as far as possible, to rectify the inaccuracies and errors. We commenced operations with such instruments as we possessed, pending the arrival of others from London.

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* The original Maps, from which the accompanying Map has been reduced, have been presented by Commander Musters to the Society. They consist of 7 sheets, the scale being 15 inches to the degree.

The existing maps referred to were the Government Map of Bolivia (by Ondarza and Mujia), Pentland's Lake Titicaca, and Hugo Reck's Altaplanicie of the Andes. The two latter proved correct in the portions that the authors themselves had surveyed, but contain many erroneous positions and altitudes. Captain Cilley was an invaluable coadjutor as an accurate astronomical observer, and also supplied the positions of the city of Santa Cruz, and others in the east of the Republic, which were subsequently verified.

We were unfortunately deprived of his valuable services shortly after the commencement of the work, as ill-health compelled him to return to his own country.

The astronomical observations were usually taken with a sextant reading to 10″ and a mercurial artificial horizon, by Messrs. Newton Brothers; but in some cases with a 6-inch theodolite, by Messrs. Troughton and Simms.

Astronomical observations for latitude and longitude have been taken at all the towns, villages, and post-houses shown on the map, and at some other points.

The latitudes result generally from meridian altitudes of *a* Crucis, *a* Centauri, Arcturus, *a* Trianguli, Australis, Vega, Castor, Pollux, Canopus, &c., and when suitable, of the sun.

The latitudes of a great number of points, particularly of those on which important bearings depend, have been determined by three, and even four observations.

The longitudes, from Sucre, depend generally on chronometer time rights, checked by prismatic compass bearings of the most conspicuous mountain peaks; but as several of the journeys were made in a very short time, the rate of the chronometer could be closely arrived at by noting its total alteration on return. An excellent watch chronometer by Frodsham was used, and it was found by experience that its rate was more regular when placed between the folds of a rug on the pack-mule than when carried in the pocket.

The longitude at La Paz was recently determined, independently of the chronometer, by means of reappearances of No. 1 satellite and lunar occultations; these latter observations, as well as those in Sucre, were made with a 3-inch telescope by Troughton and Simms.

The windings of the roads are laid down from compass bearings taken all along; the distance being arrived at, on the plains, by estimating the rate of travelling and noting the times, and in the mountainous parts by simple estimation. A great many of the intermediate points were, however, checked by cross-bearings of the most conspicuous mountains, the positions of which had been previously determined with care. All bearings were taken with a 3-inch prismatic compass by Troughton and Simms.

For the height above the sea-level a 2½-inch aneroid barometer by Troughton and Simms was originally depended on, but afterwards, suspecting the accuracy of its indications, and having compared it with several other aneroids, all of which gave a more or less different reading, Mr. Minchin ordered from Mr. Casella some of his boiling-point thermometers. These reached him in the year 1875, together with their corrections from the Kew Observatory. He has since taken observations with them over a range of 10,000 feet, and comparing the results with the aneroid readings, has corrected the observations by the latter accordingly. Not having had an opportunity of using the boiling-point thermometers below an altitude of 5000 feet, he has not given the aneroid readings much below that height, being uncertain as to their correctness.

In Santa Cruz de la Sierra, the aneroid showed 1300 feet above the sea-level.

The altitudes by the boiling-point thermometer have been calculated on the supposition that the height above the sea is equal to 520 × T, T being the difference of temperature in degrees Fahrenheit between the observed boiling-point and 212°.

The temperature of the air has, however, been noted, in case it might be advantageously applied to the calculation.

The magnetic variation in Sucre is very nearly 9° 45′ E., and in La Paz the mean of several observations gives 9° 35′ E. The more recent observations for altitude made by Mr. Minchin have led him to a conclusion, which I give in his own words:—"On my former maps these were calculated by the formula $H = 520 \times T$, which I now find gives very erroneous results at these altitudes. The present heights are calculated by the system for boiling water by Guyot's work on that subject, and they agree remarkably well with the exact height of Lake Titicaca, as given by the railway levellings."

To Mr. Minchin is due the merit of drawing the maps, and, indeed, of the greater part of the work, the results of which I feel great pleasure in presenting to the Royal Geographical Society.

It is not my intention to dwell upon the maps or to give the technical details of our observations which I have had the honour to submit to the Council, but I now ask attention to a few brief observations on the general features, climate, resources, &c., of the country, the results of three years' residence and journeying.

My experiences were confined to the departments which include the great table-land of the Andes, and the spurs and valleys of the Eastern Cordillera. The maritime department of Atacama, which contains the only seaports of the Republic, Cobija, Tocopilla, Mejillones and Antofagasta, may be regarded merely as an annexe unimportant, except as a distant and rather inaccessible outlet. The departments of Potosi, Oruro, La Paz, Cochabamba, Chuquisaca and Tarija, comprise the true Bolivia, a country which one cannot help comparing to a gigantic Switzerland. The succession of snow-clad peaks rising from forests or cultivated valleys, the deep ravines with their foaming torrents, and the vast lakes and lagoons, always recal the European alpine country, although the features of nature are on a far grander scale, and somewhat devoid of picturesque beauty.

It were indeed to be wished that the resemblance to Switzerland could be traced as regards attachment to order, combining freedom and loyalty.

Let me now proceed to sketch roughly the Altaplanicie of the Andes, a portion of the earth's surface so interesting from the remarkable formation presenting several hitherto unsolved problems.

The main chain of the Cordillera of the Andes divides into two ranges in about latitude 14° south, which re-unite in latitude 22° south. These two great chains, one running southward parallel to the Pacific Coast, and the other curving round to the east and then S.W., enclose a lofty triangular plateau, stretching nearly 500 miles from N.W. to S.E., with an average breadth of from ninety to a hundred miles.

This great table-land, the average elevation of which is 12,000 feet, is called the Altaplanicie of the Andes; it is only accessible, whether approached from the Pacific Coast or from the lowlands of Santa Cruz, by passes surmounting heights of over 14,000 feet. The Cordilleras of the Andes appear to diminish in height towards the south, and the level of the southern portion of the Altaplanicie is certainly 200 or 300 feet below the northern; but practically, in these great altitudes, such differences are inappreciable. Of the wall of mountains that enclose the plateau, the western or coast range contains the lofty peaks of Tacora, 19,000 feet, Sajama, and Cosapa, and in the southern portion of the same range several active volcanoes. In the eastern or inland range we have Sorata, recently calculated by Mr. Minchin, and Illimani.

The drainage of the western side of the Coast Cordillera is carried off by numerous insignificant streams, none of which are of any importance except the Loa, which forms the boundary between Peru and Bolivia; but the waters which flow from the eastern slopes or inner side of the Coast Cordillera, and those from the western side or inner slope of the eastern chain, all flow down to the great system of lakes which lie within the basin of the Altaplanicie, viz., Titicaca and Aullagas or Poopo, and farther south some immense Salinas or saline lagoons.

The waters of Lake Titicaca, which occupy an area of 600 square miles, are not altogether Bolivian, as the boundary line of Peru cuts off the upper half of the lake with the northern angle of the Altaplanicie. This lake, for fuller information concerning which I would refer to Mr. Markham, C.B., has an outlet or desaguadero, which, flowing with a current of generally about two miles per hour over a winding course of nearly 200 miles, empties itself into Lake Aullagas. The River Desaguadero receives the waters of the River Mauri, which is fed by the melting snows of the Tacora Range, and during the rainy season brings down a large volume of water, besides numerous other streams of minor importance. The Desaguadero itself can only be crossed by boats or balsas; the main road from La Paz to Tacna in Peru is carried over a permanent bridge of boats. Thus the Lake Poopo or Aullagas, the area of which at a rough estimate is about 400 square miles, receives all the overflow of Titicaca, as well as the waters of the numerous streams that flow from the Eastern Cordillera and the Cordillera de Los Frailes, two of which, the Rivers Ancacato and Marques, are frequently impassable during the rainy season. I may here remark that many of the smaller streams, especially in the neighbourhood of the small town of Poopo and the post-house of Pazña, are fed by boiling springs, and that the waters of the lake are slightly brackish and unwholesome. On the old maps there is marked a second Desaguadero or outlet from Lake Aullagas towards the great Salinas; but a friend of mine rode round the extremity of the lake where this exit should be, and found no trace of the existence of such a stream.

The question naturally arises, Whereas the immense body of water accumulated by the rainfall and the melting snows of the great wall of cordillera enclosing the basin of Altaplanicie have no apparent outlet, what becomes of these surplus waters?

The Indians affirm that there is a whirlpool or subterranean outlet at the southern extremity of the lake, whence the water escapes, but in what direction their tradition does not state. Others are of opinion that the evaporation which during the winter months is undoubtedly very great, compensates for the want of another outlet. May it not be posssble that the waters filter through the bed of the lake, and find their way to the surface in the immense swamps and salinas which cover an area fully equal to the lake itself, and are then distributed and lost.

So far as known, the shores of the lake are shallow, except at the southern end, near the debouchment of the River Marques, where a spur of the Cordillera de Los Frailes abuts on the margin. In general the shore is overgrown with beds of the reed called "totora," used by the Indians for thatching and for the construction of balsas. I learnt from a most trustworthy informant that the western shore of the lake is inhabited by a miserable tribe of Aimara Indians, who may be described as almost amphibious, living in wretched huts of totora-reed, and whose food consists of fish and roots.

There is a small island in the centre of the lake, La Isla de Panza, which has been occasionally used as a depôt by a gentleman who navigated the lake in a flat-bottomed barge, built for the purpose of carrying produce. Should Mr. Yokeham, the enterprising North American, who is at present endeavouring to navigate the Desaguadero in his steam-launch, succeed in his enterprise, he would have difficulty in finding landing-places except at the southern extremity.

The plains that extend between the eastern shore and the spurs of the Cordillera are locally termed the plains of Oruro.

To those who have passed the rugged mule-tracks which constitute the road from Potosi or Sucre, the name is full of pleasant recollections; the refreshing sensation of being able to travel easily and swiftly over a level and cultivated country, as a change from barren heights and deep quebradas, must be felt to be realised. The view across the lake on a fine day is magnificent, the snow peaks of Sajama and other mountains of the coast range appear to rise out of the blue waters of the lake, and towards mid-day the mirage, with its fantastic imitations of ships and buildings, may be seen in marvellous perfection.

These plains are either cultivated, and yield good crops of barley, potatoes, quinua (a description of millet), or afford grazing for flocks of sheep, herds of llamas, &c., while wild vicunas, ostriches, wild duck, and other wild fowl abound.

Among the most remarkable objects in the plains of Oruro, and indeed throughout the Altaplanicie, are the numerous Chulpas or ancient burying-places of the Indians. These are square buildings of sun-dried bricks, about 10 feet in height, and 6 feet square, having one loop-hole or window looking due east; they occur sometimes singly and sometimes in groups, but do not appear to be placed in any regular form; I frequently asked the Indians whether they knew anything of their origin, but invariably received the same answer, that they were "casas de lo gentiles," or houses of the gentiles; meaning by this term their forefathers previous to the introduction of Christianity. I, however, remarked that these chulpas are much more abundant in that part of the country where the Aimara Indians predominated. The Altaplanicie is not all as level as the plains of Oruro; in many parts the ground is undulating and broken by ranges of low hills. Along the base of the mountains that bound the plains of Oruro, the traveller notices a white mark about 14 feet above the plain, which seems to denote an ancient water-level. I was assured by an English geologist with whom I examined it that this mark is a stratum of an apparent coralline formation, and extends to the neighbourhood of La Paz, a distance of over 200 miles. Specimens of this formation which I obtained have been unfortunately lost in transmission, but others are on their way to England, which I shall submit for careful examination. I obtained some fossil marine shells from the neighbourhood of this rock, which I have fortunately preserved.

The conjecture forces itself upon me that the plateau of the Altaplanicie was at a pre-historic period the basin of a vast sheet of water or inland sea, which in some fearful convulsion of nature burst its way through the Eastern Cordillera in the locality where now stands the city of La Paz. Here the tremendous rift in the plain, the waterworn cliffs which rise a thousand feet above the city and its surrounding suburb, suggest to any observer that this must have been the place of escape for the waters of the inland sea of which the Lakes Titicaca, Aullagas, and the Southern Salinas are the only remains.

Interesting as the Altaplanicie may be as a geographical study, and important on account of its mineral wealth, which caused Hugo Reck to describe it as a table of silver supported by pillars of gold; the chief cities of the Republic, with the exception of Oruro, are situated at the foot of, or amongst, the spurs of the eastern chain of the Andes. This district may be said to contain the commercial, political and social life of Bolivia. In this range the streams rise which in a great measure form the head-waters of the two great Rivers Amazon and La Plata; the affluents of the former as a rule falling to the northward, and the latter in a south-east or east direction. The watershed of the two rivers lies in the Cordillera and spurs of the Cordillera ranging between Sauces in the Province of Tomina, Department of Chuquisaca, and Leñas and Livichuco in the Province of Chayanta, Department of Potosi.

To the north and eastward the mountain spurs gradually decrease in height until they at length terminate in the tropical savannahs bordering the Rivers Beni, Mamore, Pilcomayo, Vermejo, &c.

For information regarding these latter more unknown parts of Bolivia, which I did not myself visit, I would refer to Colonel Church.

As a natural result of its tropical position and great range of elevation, Bolivia presents a variety of climates which can only be classified after the fashion of the country; using this native nomenclature, we have, in the valleys and savannahs below the altitude of 9000 feet, the "Valle," with its subdivisions varying from tropical below 7000 feet, where sugar-cane, coffee, vanilla, chirimoyas, or custard-apples, &c., grow, to subtropical where oranges, vines and maize flourish. Ascending from 9000 feet to 12,000 the region is called "Puna," which may generally be described as temperate, differing of course in its productive powers according to the height, but including all European cereals and fruits.

The Cordillera includes the frigid region from 12,000 feet, where barley, potatoes and other roots can be cultivated, and the "Cordillera Brava" from 14,000 feet up to the region of perpetual snow. Within the limit of the latter zone the only vegetation found consists of a coarse tufted grass, a shrub known as tola, and the resinous balsambock or yareta. In some more sheltered gullies a few lonely gnarled trees called

Keuña are to be met with; one of these hardy shrubs forms a marked object above the pass of Chulancani at an altitude of nearly 15,000 feet, the highest point of the road from La Paz to Tacna (Peru). When travelling within the zone of the Cordillera Brava I was often struck with the resemblance of the surrounding scenery to the lofty plateaux that I traversed in Patagonia. The same tufted grass and coarse shrubs formed the vegetation, whilst to make the resemblance still stronger, guanacos, pumas, ostriches, and armadillos were observed: it only wanted the smoke from the Indian hunting-fires to complete the illusion, which was powerfully aided by the cutting blasts which forcibly recalled the cold of the Southern Pampas.

The traveller in Bolivia must be prepared to suffer alternately from the intense tropical heat of the valley, with its chance of tertian fever, and the certainty of being tormented by mosquitoes, vinchucas, sandflies, &c., and the cutting cold wind of the Cordillera, where at mid-day the sun scorches him, and after nightfall the thermometer is perhaps several degrees below freezing-point, while by way of a change he may be overtaken by a heavy fall of snow.

At night he will have to put up with an unfurnished cold room in a miserable post-house, where if he is lucky he may obtain a few eggs and a dish of "chupe" to warm his half-starved frame.

It is often difficult to obtain supplies of provisions, and they must be taken without consulting the owners, who can be paid for them afterwards; but on the other hand it must be stated that highway robbery is unknown, and even rich convoys of silver travel the mountain roads in perfect safety. There are many roads in Bolivia where one changes from "valley" or tropical to frigid certainly once in a day's march; it is sufficient to cite the road from Oruro *viâ* Arque to Capinota as an instance. Leaving Oruro and traversing the intermediate plain, the road passes over the high Cordillera of Tapacari at an elevation of 14,500 feet, and gradually descends, winding down the sides of a long ravine; little by little, shrubs, first stunted then larger, grow by the side of the mule-track, then a patch of barley or potatoes and a mole or two; then high flowering shrubs, ceibo and other trees appear; until at length on turning a corner, Arque is seen in the distance nestling amongst orange, fig and other trees, surrounded by maize plantations. A league or two further down the same ravine, bananas and other tropical trees come into sight, and should the traveller follow the course of the stream a couple of hours' ride will bring him to an intensely tropical valley where sugar-cane, &c., is cultivated.

I must not, however, leave the subject of climate without mentioning another evil to which the traveller is exposed, although I fortunately never suffered from it myself, viz., the Zoroche, or as it is sometimes termed "Puna," which is occasioned by the rarity of the atmosphere on change of altitude. The symptoms are giddiness and vomiting. A person attacked should on feeling the symptoms at once cease walking, and sit down if on foot, or if mounted, dismount. A good remedy is, I believe, to smell ammonia or garlic (the Indians say to eat snow). Fatal cases have occurred on several occasions owing to persons not stopping on feeling the symptoms. Mules and other beasts of burden suffer severely at times, and many die. The seasons in the parts of Bolivia through which I travelled or resided in, are as a rule very marked; rain falls during the summer months, viz., October, November, January, February, and March, whilst during the remainder, dry clear weather prevails, accompanied by strong winds in the months of August and September. At the break-up of the seasons, heavy thunderstorms occur, and not a year passes without houses or persons being struck by lightning. In the month of March, 1876, in Sucre (the capital) houses were struck three nights in succession, and considerable damage done, but fortunately attended with little loss of life. When I finally started from Sucre with my family for the coast, after we had crossed the Cachimayo, and had just completed the ascent of the mountain on the other side, a storm which had been rumbling amongst the mountains suddenly broke over us; I left the ladies with the gentlemen that had accompanied us from the city, and setting spurs to my horse, galloped on to overtake the muleteers with the baggage, and two horsemen that were carrying the children, in order to get the latter wrapped up and protected from the pouring rain. Suddenly a vivid flash of lightning passed close in front of my horse, and the next moment I rode up to the muleteers and found that two had been knocked off their horses, the cargo mules had kicked off their packs, and all was confusion. The men carrying the children were fortunately a little ahead, and were not thrown, but one was partially deafened for some time, and complained of his arm being slightly paralysed; he did not recover for several days. This division of the seasons does not apply to the Santa Cruz de la Sierra, and the lowlands through which the Beni and other tributaries of the Amazon find their way, where I am assured that rain falls capriciously all the year round. I would refer to Colonel Church for information as to this and other details regarding that portion of the Republic.

The races appear to be distributed more or less through the country according to the climates, for example, in the valleys there is a large admixture of negro blood, mixed descendants of Indians and slaves liberated at the establishment of independence. In the temperate region, Quichuas Indians appear to predominate, and Aimaras in the frigid. A general idea prevails that the Quichuas inhabit the south of the Republic, and the Aimaras the north. This is partially true, but cannot be laid down as a rule. In the desert of Atacama there is yet another race known as Atacamenos, who speak a different language, which, however, is fast dying out. These Indians occupy themselves a great deal as muleteers in the carrying trade between Potosi and Calama.

The Quichuas and Aimaras both masticate the coca-leaf, and have other habits in common; both weave ponchos and coarse woollen cloths, and are both fanatical and superstitious. In all the highest points of the passes, and wherever a murder has been committed, heaps of stones called "apachetas" (a word derived from the ancient goddess Pachaq Camac) are placed, and each Indian who passes, spits out his juice of coca-leaf, and adds another stone (as a sort of offering to the deity or spirit). The two races differ in language and disposition; the Quichua is a humble, civil, if not servile individual, who drinks his chicha and beats his wife in peace and quietness, but the Aimaras are more independent, insolent, and bloodthirsty, and these latter are much addicted to the use of ardent spirits. Whilst on this subject it might be worth while to mention that in no other country did I witness so much drunkenness amongst the lower classes, both Indians and half-breeds, especially the latter. I rarely arrived at a small town or mine without finding the greater part of the population the worse for liquor. The Indians are small and slender in *physique*, but are active and capable of enduring great fatigue, especially in long journeys. They are, when sober, a hard-working race, and either bury their earnings or spend them in religious feasts, which are always an excuse for a debauch. The Quichua Indians not situated on the highways I found to be very civil and hospitable, especially when made aware that I was a foreigner. They as well as the Aimaras are divided into two classes, Hacienda or Estate Indians, who rent land, and are subject to work a certain number of days for private persons or their landlords; and Comunidades, or Indians in communities who have to pay tribute to the Government from whom they hold their land, which they work in common. These Indians appoint their own alcalde or magistrate, who regulates the partition of crops and other questions. In some of these communities there are still some curious customs, and I believe that the Quipos or language of knots is still understood. For instance, the Indians in the community situated near Puna, Province of Potosi, when a young couple are married, all subscribe something in kind to assist the newly-married couple. For the greater part of the cultivation in Bolivia, irrigation is necessary, and the Indians are very dexterous in constructing acequias or aqueducts for this purpose. They are very reticent regarding their traditions, also as to showing mines, although undoubtedly possessed of the secret of many rich mineral deposits.

The population of Bolivia has been computed at 2,526,000, distributed over an area of 53,228 square leagues, of which two-thirds live in the country districts, and one-third in the cities.

The Indian inhabitants were much reduced in number in 1866, when a fever raged amongst the coloured race. Strange to say no others were attacked by it, although it is well known that the Indians used every possible means to convey the contagion to the whites. The results of this epidemic are still observable in many parts of the Altaplanicie, which has never recovered the depopulation of that period.

The chief cities of the Republic, situated as already remarked on the Eastern Cordillera, are, in the south Sucre, Potosi, Cinti, Tupiza and Tarija; in the north La Paz, Cochabamba and Oruro; Santa Cruz de la Sierra lies to the east, in the lowlands. Sucre, the capital of the Republic, was thus re-named at the establishment of independence after Bolivar's famous general, Sucre, who became the first president of the new Republic. It commonly, however, retains its ancient and more euphonious name, Chuquisaca, formed from the two Aimará words, Chuqui (gold), chaca (bridge). The town would appear, if not actually to owe its origin, to have been greatly indebted to the discovery and working of the famous mines of the Cerro of Potosi, the wealthy miners using it as a place of resort or refuge during the winter months, when the climate of Potosi becomes insufferably cold. (Children generally are born dead or blind in Potosi.) In the year 1609 an archbishopric was created, and the Real Audiencia, or Supreme Court of Justice for the South American Colonies, fixed there under the name of S. Arzobispado y Real Audencia de la Plata y Charcas, Charcas being, according to Cortes the historian, the name of a community of Indians existing previous to the Inca Empire. Several colleges were founded at the same date, and until quite lately Sucre was considered the seat of learning in South America, and young men from all parts flocked to her university. At present the colleges have much fallen off, but I believe the best education Bolivia boasts may be obtained there. Sucre is the residence of the Archbishop, the Supreme Court of Justice, and the President, when fears of revolution do not necessitate his staying at La Paz. The Congress also meets every two or three years. The great sight for a foreigner is Nuestra Senora de Guadalupe, or in plain terms the image of the Virgin Mary, richly adorned with gold and pearls and precious stones, which are valued at two million dollars. The custodia or plate of the cathedral is also very rich, and there are some very fine religious paintings, some of which are attributed to Murillo. The upper class of people are more aristocratic in their ideas, better-mannered, better dressed, and speak purer Spanish than in the other cities of the Republic, and, in fact, than in most of the South American towns. It is really quite astonishing to see the good taste with which the ladies in general turn out for a ball, and it must be also borne in mind that most of them make their own dresses, as there are no milliners. The men not employed in the different courts of justice or in Government offices, with the exception of two or three wealthy mining proprietors, generally occupy themselves in commerce.

Several of the richest merchants are either foreigners or direct descendants of foreigners, generally French or Spanish Basques. Amusements are almost *nil.* Now and then an amateur theatrical performance takes place in an old church that has been converted into a theatre, but during the whole of my residence no professional company ever performed. Balls are given at times by private persons, but the rules of mourning are so strict, and the people so intermarried, that the death of any leading member of society often puts a stop to proposed gaiety. The ladies pass a great deal of their time in the churches, and the men either visit or make up parties of rocambur or quadrilli, the game of cards known among our ancestors in the last century, in their own houses. At times, when the President is in the capital, the regimental band plays in the evenings on the "Plaza," and on rare occasions the Plaza is boarded round, and bull-fights or rather bull-baiting takes place. In the last that occurred, two or three drunken Indians and half-breeds (who had imbibed Dutch courage) were gored to death amidst the exclamations of the spectators.

The cholo or half-breed race (for no pure Indians reside in Sucre) occupy themselves chiefly in trade, tailoring and carpentering being the most favourite (there are also some good silversmiths). They are as a rule much more docile and less turbulent than this dangerous element generally is in other parts of the Republic, but are as usual very drunken, immoral, and improvident. It is a proverb through the Republic that revolution consists in Sucre of shouting and in other parts of shooting. Easter week in Sucre is a scene once observed never to be forgotten. The amusements of the half-breeds, putting on one side drinking, consist chiefly in cock-fighting, battle-royals with slings and stones, playing fives, and one or two other games. The climate of Sucre is very agreeable; it comes under the head of temperate, and enjoying the immediate proximity of Valle, the market is well provided with tropical fruit, also with potatoes and other vegetables, productions from the immediate neighbourhood. Potosi, situated 50 miles distant and to the S.W., and about 4200 feet higher than the capital, is memorable for its ancient history, and the immense wealth in silver ore taken from its Cerro, estimated by Cortes to have produced upwards of £236,000,000 sterling. It is at present inhabited by a population of only 15,000, whereas Potosi in her palmy days boasted over 175,000. No city in Bolivia has suffered so much through civil war both previous to and subsequent to the declaration of independence; the suburbs are a mass of ruins. Some monuments, however, still remain of her former riches, which appear to defy both time and revolution. Of these the principal are the reservoirs for supplying water to the city, and power to work the stamp mills, thirty-two in number, constructed at the cost of three million dollars by the Spanish Government. The Mint, a stone building, occupying an entire block in the city, the beams for which were dragged by oxen from the far distant woods of Tucuman, constructed in 1562 at a cost of over a million dollars, and the Church of the Matriz, which for its grand and simple beauty is perhaps unsurpassed in South America.

The small town of Cinti, department of Chuquisaca, is situated about 100 miles S. from Sucre and 60 miles from Potosi; it is important for its vineyards, which supply the whole of the south of the Republic with wine. Tupiza and Tarija are closely connected by mercantile relations with the neighbouring Argentine Confederation, and are notable, the former for the rich mines in its vicinity and the latter for its profuse vegetation, tobacco, and the immense fossil bones discovered there.

Santa Cruz de la Sierra supplies coffee, sugar, tobacco, &c., for the production of which its intensely tropical climate is admirably suited, to the other part of the Republic; the population have been engaged in revolutionary movements during the last six months, and by the latest advices order was not restored.

The three most thriving and populous cities are certainly those situated on the north of the Republic. La Paz, lying in a basin already described, contains, it is said, a population of 80,000, chiefly Indians and half-breeds of the Aimara race. Situated close to Lake Titicaca, and communicating with the Puno and Mollendo railway by coach and steamer, it is easy of access to foreigners, and the city is progressing in spite of all obstacles. It is the emporium of the chinchona-bark, which the cascarilleros collect in the forests of the eastern slopes of the Cordillera. The climate is esteemed so healthy that Chilians and Peruvians suffering from phthisis resort to the city as if to a sanatarium. There are two or three hotels, good baths, and public walks, maintained with unusual neatness under the charge of an Italian. Cochabamba, lying to the south-east of La Paz at a level of 8000 feet, enjoys a beautiful climate. The inhabitants, numbering 40,000, chiefly half-breeds of the Quichua race, are industrious and thriving, though not renowned for honesty and sobriety. An enterprising American firm, Messrs. Haviland and Key, have many years maintained a line of coaches running to the neighbouring towns of Clisa and Arani, and as usual the development of good transport has benefited the locality.

Oruro is notable chiefly for the rich mines in its neighbourhood, but the town has suffered so much in the wars and numerous revolutions that the population has materially decreased.

Time does not permit me to treat of the various projects which are on foot for developing new means of communication so essential to the progress of the country; or of the native industries, which, indeed, scarcely deserve mention, except that of mining, a subject too extensive to be handled on this occasion. Bolivia is a country with a brilliant past, and, if well governed, a probably prosperous future. No other state in South America is endowed by nature with equal resources, and to utilise these she possesses a numerous population of industrious Indians, whose labour at present is not turned to sufficiently good account either for themselves or their country. Both Quichuas and Aimaras, under good administration, would prove invaluable either as cultivators or miners. In her tropical valleys, cotton, coffee, indigo, the vanilla bean, tobacco, sugar-cane, india-rubber, chinchona-bark, and various other valuable vegetable productions exist. In many places these are not cultivated, for the simple reason that, from the inefficiency of the present means of communication, markets are inaccessible and machinery cannot be erected on the estates. In the temperate region we have all European fruits and cereals, but the Indians, especially those in communities, do not cultivate a tithe of the land that they might, owing chiefly to the rapacity of the correjidores and collectors of taxes.

I heard of one case of a magnificent harvest on the frontier of the Province of Chuquisaca, where half the crops were not even harvested, as the owner of the estate did not think it would pay to send his produce to the capital, and he had no mills on his property.

But the mineral riches in Bolivia are or ought to be her mainstay: gold, silver, copper, tin, antimony, bismuth, &c., exist over almost all the country. The silver-ores are wonderfully rich. It is sufficient to name the mines of Portugaléte in Chichas, La Riva in Potosi, Colquechaca and Oruro, all of which are producing richly, yet it will scarcely be credited that good money, *i.e.*, good sterling coin, does not exist in the country. The traffic in mules with the Argentine provinces is becoming smaller every year, chiefly owing to the fact that the importers cannot get paid in sterling coin. The mint in Potosi, worked by steam-power, is out of order, and the Government have not sufficient funds in the exchequer to put it to rights, at least such is the excuse given; whereas they have sufficient money to clothe and arm a mob of soldiers, who serve merely for theatrical show and for the intimidation of those who object to the present rules.

The real secret of the poverty of Bolivia lies in the revolutionary spirit of the people, which appears to be caused partially by the years of civil war previous to the War of Independence, and partially to a love of change and excitement combined with the fact that everybody wants a post under Government, and consequently those out of power are bitter enemies of the existing Government. The remedy for this, indeed the antidote to rebellion, is to be found as has been shown more especially in the Argentine Confederation, in increased and swift means of communication, which would also afford occupation for many idlers who are ready to embrace any opportunity of bettering themselves by revolution.

Failing such remedial measures, it appears more than probable that sooner or later the Republic will be disintegrated, and her territories parcelled out amongst the neighbouring states.

X.—*Notes on some of the Physical and Geological Features of the Transvaal, to accompany his new Map of the Transvaal and surrounding Territories.* By FREDERICK JEPPE, F.R.G.S.

INTRODUCTORY.

THE new Map of the Transvaal, compiled by the writer on a scale of 1 : 1,850,000, comprises all the territory between 21° and 30° S. lat. and 23° and 33° E. long., thus including the Tatin goldfields and a good portion of the Matabele country, the whole of the new colony of Griqualand West (Diamond Fields), a small corner of the Cape Colony, the greater parts of the Orange Free State and of Basuto Land, the colony of Natal down to Durban, and the whole sea-coast from Durban to Delagoa Bay, including the Territories occupied by the Zulu and Amatonga tribes, and a small portion of the Portuguese possessions on the East Coast.

On the margin of the Map are inserted, viz., a plan of the township of Pretoria, the seat of the Transvaal Government; a plan of Lourenço Marques, the seaport of Delagoa Bay; a continuation of Mauch's Route as far as Zimbabye, with a "View of the Ruins" discovered by him; a Table of Distances throughout the country, mostly taken by trochiameter; and another, showing the distances and altitudes of the projected railway-line from Delagoa Bay to the Drakensberg.

The topography of the Map has been carefully compiled from the explorations of Mauch, Mohr and Hübner, Baines, Erskine, Capt. Elton, Dr. Cohen, &c., and the route-maps and information furnished by Col. Colley and R. T. Hall, combined with my own observations during fifteen years' residence in the country.*

From the routes of the numerous travellers who have explored the eastern part of South Africa, the following have been embodied in the Map:—St. V. Erskine, F.R.G.S., 1868 and 1872; E. Mohr and A. Hübner, 1869–1870; Captain Elton, F.R.G.S., 1870; C. Mauch, 1869–1871; T. Baines, F.R.G.S., 1871–1873; C. F. Osborne, 1872; Dr. E. Cohen, 1873; Colonel Colley, 1875; P. Hope, F.R.G.S., 1873; some of which appear for the first time in a Map of South-eastern Africa.

The western part of the Transvaal has been compiled according to the excellent and most reliable observations of Edward Mohr, of which a list appears in his book recently published in

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* I regret that Mr. Erskine's map of his journey to Umzila's, in 1872, has not reached me in time to make certain alterations and additions along the course and in the vicinity of the Olifants River.

Germany,* while for the central, northern, and eastern parts of the Transvaal, the observations of Mauch, Moodie, Erskine, Captain Bawden, R.N., &c., have been adopted; the sea-coast was taken from the old map of Jeppe and Merensky, re-constructed and augmented by Dr. Petermann in 1868, corrected by the latest observations of Delagoa Bay, while a number of other maps, compiled and published by Dr. Petermann, have been used in the new publication.

PHYSICAL CONFIGURATION.

Area.—According to a rough planimetrical calculation of the new Map of the Transvaal, the present territory comprises an area of about 115,000 English square miles. Compared with the area of the neighbouring States, viz.:

Cape Colony . . .	195,877	English square miles,
Basuto Land . . .	8,451	"
Griqualand West .	16,632	"
Orange Free State.	42,477	"
Natal	18,751	"

it appears that the Transvaal is nearly two-thirds the size of the Cape Colony, and nearly 29,000 square miles larger than Basuto Land, Griqualand West, the Orange Free State, and Natal added together.

Of European States, the Transvaal is very nearly the size of Great Britain and Ireland, and about the same size as the kingdom of Italy.

Boundaries.—The territory of the Transvaal is situated between 22° 15′ and 28° 20′ S. lat. and 25° 10′ or 26° and 32° 10′ E. long. On the north and north-west, the Limpopo or Crocodile River divides it from the Matabele country and Matchen's territory; on the east, the Lobombo Mountains separate it from the Portuguese possessions, Umzila's country of Gasa, and the Amatonga tribe; on the south-east it is bounded by Zululand and the colony of Natal; on the south, the Vaal River and its tributary the Klip form the boundary between the Transvaal and the Orange Free State; as the western and south-western boundary, the Transvaal claims a line formed by the Notuani River, thence to the Kunynana Hills, and along the western banks of the Harts River down to where it joins the Vaal in lat. 28° 28′ S. and long. 24° 42′ E. This includes a considerable slice of country in dispute between the late Republic and the British Government, according to the award of the late Governor Keate of Natal, dated 17th of October, 1871. The two lines with which the Transvaal comes in contact, according to this award, are given in the Map; but as most of the localities mentioned in the award cannot be ascertained on any published map, the delineation of the boundaries must be considered only approximate.

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* Mohr, E., 'Nach den Victoriafällen des Zambesi,' 2 vols. 8vo., 568 pages; Leipzig, Hirt, 1875. (An English translation by N. D'Anvers, published by Sampson Low & Co., London, 1876, does not contain these observations.)

The *first* line, forming the eastern boundary of the territory awarded to the Bangoaketsi, Baralong, and Batlapin tribes, commences at the Notuani, and runs in a straight line nearly southward to Ramabulama, a point some distance to the west of Zeerust (Marico), and a few miles north-west of Buurmann's Drift on the Malopo River; thence due east to Mosiga, an old mission-station, about 7 miles south of Zeerust, near the sources of the Klein Marico River; thence the line runs in a south-western direction along the waggon-road leading to Lotlakane as far as Buurmann's Drift; again east, along the Malopo River to its source; thence south-east past the sources of Harts River, near Lichtenburg to a point near Taaibosh Spruit, and again south-west, to the sources of the Makwasi Spruit, or Pogola, and down this spruit to its junction with the Vaal.

The *second* line mentioned above, forming the eastern boundary of the new province of Griqualand West, runs from Ramah on the northern bank of the Orange River, south-east of Hopetown, in a north-eastern direction to David's Graf, near the junction of the Modder and Riet Rivers; from David's Graf in a northern direction to Platberg on the southern bank of Vaal River opposite Hebron; and from Platberg north-west in a straight line to a point north of Boetsap, situated on the north-western bank of Harts River, &c. These lines were proclaimed by Sir Henry Barkly, Governor of the Cape Colony, on the 27th of October, 1871; but according to the agreement lately entered into between the Earl of Carnarvon and President Brand, dated London, 13th of July, 1876, the dispute, as far as the claim of the Free State to the Diamond Fields is concerned, has been finally settled by the adoption of the following line, viz.:—

"The frontier shall be known and recognised hereafter by a line drawn from Rama (Fountain), passing through David's Graf (close above the junction of the Riet and Modder Rivers), to the beacon standing on Tarentaal Kop (and marked by De Villiers on the map referred to hereafter); thence by a straight line at right angles to the line from David's Graf to the summit of Platberg, and from the point where the two lines join thence to the summit of Platberg; thence in a straight line to the point marked G on the said Map on the River Vaal, including the whole of the place known as the Diamond Fields."

The question with the Transvaal regarding the line from the point marked G on the Vaal River to the Harts River and Boetsap, and the Makwasi Spruit line, remains still unsettled. The Republican Government repudiated the award, and the same has only been partially maintained by Governor Barkly since his proclamation of 1871. In the meantime, the Transvaal Government has obtained cessions of the territory between Makwasi Spruit and the Platberg line from the Baralong and Batlapin tribes, to whom the land was awarded.*

On the eastern boundary of the Transvaal, it will be seen that the territory of the Amaswasi tribe has been included in the general boundary of the Transvaal. A treaty entered into between the late Republic and the Amaswasi † states that the tribe referred to, although retaining the "free and unlimited possession" of the lands assigned to it, and free jurisdiction according to its own laws, binds itself to become "subjects and obedient servants" of the Transvaal.

According to a proclamation published in the 'Staats Courant' of the Transvaal,‡ the line defining the territory assigned to the Amaswasi tribe (in the treaty referred to) runs from a point below the lower poort of Komati in the Lobombo Mountains, south-west along a block of Government farms to the eastern line of New Scotland, and along this and the "Londina" line southward to a beacon south of the Muzaan or Zendelings River; thence in a straight line due east to the north point of a hill called Umkuakueni; thence east by north to the Lobombo Mountains, and along this mountain-range northward to the starting-point.

With reference to the boundary dividing the Transvaal from Zululand, it must be observed that, according to the old treaties entered into with the Zulus,§ a great portion of Zululand, including St. Lucia Bay, was ceded to the immigrant farmers, and it was stipulated that the country should not be occupied at once; but that certain tracts of land should be beaconed off and occupied from time to time, according to the wish and request of the conquerors. But when, in after years, a slice of territory, containing some 40 farms of 1500 acres each, was "inspected" and beacons defined, the present Zulu chief Ketchwayo disputed the old treaties, and raised objections to the occupation of the farms.

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* Treaty with Massou Ritt Taaibosh, Superior Chief of the Koranna nation, dated Christiana, 6th December, 1872. Treaty with Mashete, Sup. Chief of the Baralongs, dated Matjavis Stad, 1st July, 1873. Treaty with Gassibone Botlasitse, Sup. Chief of the Batlapins, dated 11th December, 1873.

† Treaty with Umbaudini, chief of the Amaswasi tribe at Lotiti, 1st July, 1875.

‡ Government notice of Acting State Secretary, dated Pretoria, 17th August, 1875.

§ Treaties with Dingaan, 3rd February, 1838, and 13th May, 1839. Treaties with Panda, 14th February, 1840, and 16th December, 1864.

As will be seen on the Map, the line* extends along the Lobombo Mountains, from where the Maputa River emerges in lat. 26° 50′ s., to the Pongola, where this river breaks through the Lobombo; thence in a straight line west-south-west to the highest point of the mountain called Chocujiens, or Zungin Nek; from this point in a south-western direction, crossing the White Umvolosi to a high range called Nouta, or Ingnutu, to certain beacons erected in 1864, and along the south-western side of Assagaai's Kloof to Rourke's Drift, on the Buffalo River, the Natal boundary.

The boundary-line separating the Portuguese possessions on the east coast from the Transvaal, according to the treaty with Portugal,† begins on the Lobombo Range, at the Maputa river; thence northward along the highest ridge of this range to the poort of the Komati River, where this river flows through the Lobombo; thence north to Pokione's Kop, on the north side of Olifants River, to the nearest point of Serra di Chicundo on the Limvubu River; and from this point in a straight line to the junction of the Pafuri (Limvubu) with the Limpopo.

The boundaries of the twelve districts or provinces of the Transvaal appear for the first time in a published map, and may possibly not be quite correct, owing to the difficulty in ascertaining some of the places mentioned in the proclamations and maps defining the lines. They are, therefore, subject to future correction.

Before passing on to another subject, I may as well mention here a circumstance in connection with the map published by the writer and Merensky in 1868, which has lately been referred to in certain South African papers, as an additional proof that the territory claimed by the Chief Sekukuni did not belong to the Transvaal, as the map referred to was supposed to exclude it.

In compiling the map in 1868, the writer made use of a rough sketch of the eastern part of the country supplied to him by Mr. Merensky, who was well acquainted with that district, and had resided for four years as a missionary in the territory now claimed by Sekukuni. In this sketch a coloured line was merely drawn to show the territory then *occupied* by Sekukuni's and other native tribes, in which no white man was then actually settled. This line was defined in the map, but at the same time a straight line due north from the Drakensberg to the Limpopo was inserted to show the *general* boundary of the *then undisputed* territory of the Transvaal. In some of the maps, engraved and coloured in Europe, the last-mentioned northward boundary-line appeared, while it was omitted in other copies. A number of maps, compiled by Mauch and others after 1868, adopted erroneously the coloured line defining the above-mentioned native locations as the general boundary of the Transvaal, and thus a mistake was continued until Mr. Merensky rectified it in his map published last year.

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* According to a proclamation of acting president Joubert, 25th May, 1875.

† Treaty concluded with Viscount Duprat, Pretoria, 29th July, 1869; ratified and exchanged on 10th July, 1871, for six years.

HYDROGRAPHY.

Rivers.—The two principal rivers forming the southern and south-west and northern and north-west boundaries of the Transvaal are the Ky Gariep or Vaal River, and the Crocodile, afterwards called the Limpopo, Oori, Bempe or Bembe, Miti, and Inhampoora. The Vaal River rises in the Drakensberg Range to the west of New Scotland. The true and chief source of this river was for many years the subject of dispute between the Transvaal and the Orange Free State, until finally referred to and decided by the award of the late Governor Keate of Natal.* The Transvaal claimed the Wilge River, the most southern branch of the Vaal, as the boundary; and the Free State the Likwa or Kapok River, the most northern branch of the Vaal. Governor Keate chose the medium between the two, and declared Gans Vley, a small rivulet rising on the northern extremity of Natal and flowing into the Klip River, to be the boundary between the two States; thence along the Klip River to its junction with the Vaal.

From the confluence of the Klip River with the Likwa, or Kapok, or Krom, which each receive numerous small spruits, the Vaal River receives the following tributaries, within the Transvaal territory, from the north:—Waterfall, Kalk Spruit, Zuikerboshrand and Klip Rivers, Riet Spruit, Eland Spruit, Enzels Spruit, Mooi River with Loop Spruit, Matchavis Spruit, Koekemoers Spruit, Schoen Spruit, Yzer Spruit, Matjesgoed Spruit, Klip Spruit, Leuw and Wolf Spruits, Makwasi Spruit, Bamboes Spruit and Harts River.

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* Award of Lieutenant-Governor Keate, dated P. Maritzburg, 19th Feb. 1870.

A high plateau, which intersects the country from west to east, called "Hooge Veldt," forms the watershed of the rivers running south to the Vaal and north to the Crocodile and Limpopo, while the Drakensberg Range is the watershed between the rivers running west to the Vaal and Limpopo and east to Delagoa Bay and the sea-coast.

The Limpopo rises on the highland in numerous sources north of Witwaters Rand, flows through the Magaliesberg Range between Commando and Mozilikats Neks, and flowing first north-west, then north-east, and, later, east and south-east, receives the following tributaries on its left bank:—Magalies River, Sterkstroom, Hex and Eland Rivers, Franck Spruit, Marico, Notuani, Serorume or Surimane, Mahalapsi, Lotsani, Seruli, Shasha, Bubye, and Nuanetsi; while the Jokeskey, Hennops, Sand, Apies, Pienaars, and Plat, Vlieg Poort, Sand, Matlabas, Pongola or Sand, Palala, Nylstroom or Magalaqueen, Hout, Tave, Limvubu or Pafuri, and finally, the Olifants River, with its numerous tributaries, join the Limpopo on its right bank.*

On the eastern side of the Transvaal the Sabie, and Crocodile or Ingwenya, and Komati or Umkomati Rivers rise in the Drakensberg Range, flow through the Lobombo, and unite beyond this range into one river, called the Manice, Manhissa, Manhico, Umcomogasi, Umkomanzi, Uhlwandle, or King George's River, flowing into the northern part of Delagoa Bay, opposite Sheffeen Island.

The Umbelosi or Umvolut rises south of the Komati, at a height of 4300 feet above the level of the sea. It is called here the Black Umbelosi, and, after being joined by several smaller streams, it receives the White Umbelosi from the south, flows through the Lobombo range, is joined by the Matalha from the north, and disembogues into Delagoa Bay, by an inner bay or estuary, called Dundas or English River, or by the Portuguese "Rio do Esperito Santo," or "Rio de Lourenço Marques." It is along the banks of this river (as shown in the map by a broken line) that the first railway connecting the Transvaal with the east coast is proposed to be constructed. The Umbelosi is navigable with flat-bottomed boats for about 20 miles to the Kaffir kraal Bombei.

The Tembe, rising in the Lobombo Mountains, and discharging itself also into the English River, close to the Umbelosi, is likewise navigable for about 60 miles up to a point about 15 miles distant from Ishlesha's (Echliza's) kraal. This river is entirely within the Portuguese territory.

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* Erskine states the junction of the Olifants River with the Limpopo to be in lat. 24° 8′ s., and long. 33° 2′ E., while he fixes the embouchure of the Limpopo in lat. 25° 12′ s., and long. 33° 45′ E.

We now come to the Usutu or Maputa River, which rises on the New Scotland Settlement at an altitude of 5350 feet. The different tributaries of this river consist of the Little Usutu, Impeloose, Great Usutu, Umkompies, Umkonto or Assagaai, and Umtaloos, and, after having passed through the Lobombo, this important river is joined by the Pongola, with all its tributaries from the south, and, flowing north-east, enters the southern part of Delagoa Bay as a large river, navigable for about 80 miles. At a distance of 18 miles inland the width of this river is said to be 1700 feet, with a depth of 60 feet, and 14 feet tide-water. Higher up, at the junction of the Umgevuma and Pongola, the river is stated to be still 6 feet deep, and 70 yards broad. Up to this point it is navigable with flat-bottomed boats. The late Alexander McCorkindale, so well known for his enterprise and energy, intended to make use of this river for the conveyance of merchandise from Delagoa Bay to the Lobombo. Beyond this the goods were to be taken on by bullock-waggon to Derby and Hamilton.

In the south-east corner of the Transvaal the Buffalo River, emptying itself into the Tugela, forms the boundary between the Transvaal and Natal. The Slang, Sand, and Bloed Rivers join the Buffalo from the north within the territory.

Navigability of Rivers.—Of all the rivers draining the country to the west of the Drakensberg Range, none are at present available for navigation. The Vaal River would, perhaps, be navigable during the rainy season at short distances, where it gains a considerable depth during the heavy rains, but in the dry winter season, islands, rapids and small falls would render it useless as a channel for communication. In January, 1871, Mauch made a voyage down the Vaal River in a flat-bottomed boat, 10 feet long and 4 feet broad, from the junction of the Mooi River to Hebron, a distance of about 300 miles. In his report to Dr. Petermann, published in the 'Mittheilungen,' Mauch refers in the following terms to the probability of rendering the Vaal River navigable:—

"With reference to the importance of the Vaal River as a channel of communication for larger boats and small steamers, in the present state of the river it would be impracticable, even with considerable high water: but, with a small outlay, the river might be made available for such vessels, partly by avoiding the rapids and falls, extending mostly only a short distance, by means of canals; partly by clearing certain branches of the river now filled up with loose stones and rocks; and partly by the removal of dykes running across the river, and of willow-stumps impeding its passage. By these means a communication by water of more than 300 miles could be established, including a distance of 80 miles, terminating at Bloemhof, which does not want the slightest alteration. I do not doubt that this road will be made use of with the growing traffic. The large population attracted by the Diamond Fields will have to be supplied by the Transvaal with the necessary bread-stuffs and provisions, and necessity will demand the adoption of such means of communication which could not be influenced by lung-sickness, want of pasture and forage, and other drawbacks."

Concerning the Limpopo, which Mauch crossed twice between 31° and 32° of longitude, he observes:—"The nearer I came to this river, the more I was disappointed respecting its qualities. Instead of a broad, navigable, and deep river, passable with the greatest difficulty, I perceived a tremendous sand-river, 1250 yards broad, of which about 150 yards of the southern bank were covered with knee-deep, rapid-running water. The rest is covered with deep, coarse sand, or sparely-growing reed-grass. The banks are very low, and the northern can hardly be distinguished from the bed of the river."

Where he crossed, a little higher up, in 1871, he reports the bed of the river only 250 yards broad, and 3 feet deep.

In July, 1870, Captain Elton made a voyage down the Limpopo,* with the view of discovering a shorter route of practicable communication, partly by land, partly by water, between the Tatin and the sea-coast. At the two affluents of the Shasha, where Captain Elton first touched the Limpopo, he speaks of it as "a broad, deep stream, about 200 yards in breadth." He started on August 1st, 1870, from the confluence of the Shasha, in a flat-bottomed boat, 13 feet long, constructed at the Tatin, and carried overland to this point; but, after a voyage of five days, over a distance of 85 miles, his trip was brought to a sudden termination at the falls of the "Tolo Azime," where he narrowly escaped being swept down the falls. He reached the shore in safety, but the boat was ultimately swept down the chasm and dashed to pieces on the rocks.

For a graphic description of these magnificent falls, discovered by Captain Elton on August 5th, 1870, we must refer to the 'Journal of the Royal Geographical Society' mentioned above. From these falls Captain Elton continued his journey on foot along the banks of the Limpopo, as far as the junction of the Lepalule or Olifants River, where he left the Limpopo and struck off to Lourenço Marques, which place he reached on the 8th of September, 1870, in 63½ days (including 11½ days for stoppages), from the Tatin, having travelled over a total of 964½ miles, or 629 direct geographical miles.

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* 'Exploration of the Limpopo River by Captain Elton;' read before the Royal Geographical Society of London, 13th November, 1871.

The conclusion Captain Elton has come to is, that the Limpopo is navigable up to the confluence of the Limvubu (Pafuri), a distance of 336 miles, for steamers of light draught. "I will undertake," he says, "with six months' preparation, to run steamers and flats to the Nuanetzi or to the Limvubu in fifteen days, and connect with a waggon-road (or with camels) *viâ* Zoutpansberg to the Tati, a journey which should be made easily in fifteen more."*

The late Thomas Baines, who crossed the Limpopo higher up, in lat. 22° 38′ S., and long. 28° 50′ E.,† on the 30th of October, 1871, makes no remarks regarding the navigability of the river, but speaks of it as "a fine stream, 100 yards broad, and knee-deep, flowing about 2 knots per hour, with sand-banks and islands, and a dense border of thorns on each side."

Lakes or Pans, Salt-pans, Hot Springs, &c.—The only collection of water in the Transvaal that may be distinguished from the numerous pans and called a lake, is the so-called "Lake Chrissie," in the New Scotland Settlement, not far from Klipstapel, on the high plateau, some 14 miles in circumference, and of considerable depth. But small pools of water, called "Pans," are found all over the country, and are particularly valuable during the winter season on the High Veld, and other parts scarce of water. There are valuable Salt-pans in some parts of the Transvaal supplying the inhabitants with this necessary commodity. The principal are near Pretoria; on the Vaal River, near Schoen Spruit and Bloemhof; and along the banks of the Harts River. Of mineral springs we find some in the district of Utrecht on the White River, a small tributary of the Pongola. They are sulphureous, and some of them have a considerable heat. There is also a warm saline spring on the Assagaai River, a *cold* sulphureous spring on the south-west side of Makatoes Kop, and a sulphurated tepid bath near Doornberg, on the Pifân River.

Mauch found some sulphureous hot springs close to the Eland's Spruit, north of New Scotland, but the best known are those of the so-called "Warmbad" in the district of Waterberg, visited by invalids from all parts of the Transvaal and neighbouring states. The following analysis, made from a small quantity of the water taken to Germany, was effected in the

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* Erskine differs from Captain Elton as to the navigability of the Limpopo, as will be seen by his report on his "Journey to Umzila's," 'Journal of the Royal Geographical Society,' vol. xlv., 1875.

† I have called the drift "Baines' Drift" on my map, as my old friend was the first who crossed the river at that particular spot.

University of Heidelberg, and has been forwarded to us through Dr. Cohen:—

"*Warm Bath near Nylstroom.*—The water analysed for *quality*—there not being sufficient of it for making an analysis for *quantity*—proved to be similar to those of Wildbad, Gastein, Pfaffers, Ragatz, and Baden-Baden, the most renowned of the European Spas, which are noted for their great success in the cure of gout, rheumatism, old sores, paralysis, nervous debility, scrofula, and neglected catarrh."

OROGRAPHY.

Mountains.—Two ranges of mountains of inconsiderable height intersect the country from west to north-east. The southern range, called Kashan Mountains or Magalies Berge, stretches from the Marico River to Pretoria, and another extends from the Marico to Pokiones Kop, north of Olifants River, consisting of detached ranges, known as the Witfontein Berge, Marikele or Waterberg Mountains, Hanglip Mountains, Makapans Range, Zebedeli's or Strydpoort Berge, and Maschischimala Berge, while a continuation of the Kathlamba Mountains or Drakens Berge stretches along the eastern boundary from Natal to the Olifants River, also in broken and detached mountains and ranges called Verzamel Berge, Randberg, Slangapies, Komati Berge, Steenkamps Berge, &c. This considerable mountain-range attains an altitude of 5000 to 6000 feet in some high peaks near Lydenburg. It forms the termination of the high plateau or Hooge Veldt, which slopes gradually down to the sea in several distinct terraces, from which numerous rivers descend in beautiful falls and cascades to the fertile plains below. In the southern parts of the Transvaal we find some low ranges of hills in the Makwasi Berge, Gats Rand, Houdtbosh Rand, and Zuikerbosh Rand, near Heidelberg. The Witwaters Rand forms the termination of the Hooge Veldt, stretching over the whole breadth of the country. In the district of Marico we find the Ramazoen and Tschuanyana Berge and Dwars Mountains, north of Rustenburg the Pilands Berge, and north-west of Lydenburg the Lolu Mountains, on the north-eastern slope of which Sekukuni's stronghold is situated, while the extreme north is closed in by the Blauwberg and Zoutpans Berge, which latter reach up to the Limpopo in three distinct ranges of hills. The Spelunken, Matyatye's Berg, and Murchison Ranges, between the Zoutpans Berge and the Olifants River, are also distinct ranges of hills, dividing the highland from the large plain, stretching from the Olifants River far beyond the Limpopo.

Altitudes.—As it would seem superfluous to insert a table giving *all* the altitudes marked on the present map, we subjoin the following only, showing the height of the principal mountains and places of the Transvaal according to the latest data:—

TABLE showing the HEIGHT of some of the PRINCIPAL MOUNTAINS and PLACES of the TRANSVAAL.

Name.	Locality.	Height in Feet.	Authority.
Mauch Berg	District Lydenburg	7177	Dr. E. Cohen.
Klipstapel	,, Middelburg	6020	R. T. Hall.
Lake Chrissie	New Scotland	5755	Ditto.
Spitzkop	District Lydenburg	5637	Dr. E. Cohen.
Hol Nek	New Scotland	5600	R. T. Hall.
Hamilton	Ditto	5530	Ditto.
Little Usutu, sources of	Ditto	5350	Ditto.
Martinus Wesselstroom	District Wakkerstroom	5300	T. Baines.
Highest point of Hooge Voldt between Pretoria and Vaal River	,, Middelburg	5187	Ditto.
Retief's Drift, Vaal River	,, Wakkerstroom	4810	Ditto.
Holfontein	,, Potchefstroom	4810	Ditto.
Wonderfontein	,, ,,	4785	Ditto.
Lydenburg	,, Lydenburg	4706*	Dr. E. Cohen.
Luuse's Drift, Vaal River	,, Heidelberg	4651	T. Baines.
Pretoria	,, Pretoria	4450	R. T. Hall.
Potchefstroom	,, Potchefstroom	3900	E. Mohr.
Rustenburg	,, Rustenburg	3695	Ditto.
Proposed Railway Terminus	Drakensberg	3670	R. T. Hall.
Utrecht	District Utrecht	3528	T. Baines.
Marico Junction	,, Rustenburg	2676	Ditto.
Highest point, Blauwberg	,, Zoutpansberg	2500	C. Mauch.
Notuani Junction	,, Rustenburg	2254	T. Baines.
Highest point, Makapans Range	,, Waterberg	2000	C. Mauch.
Baines' Drift, Limpopo	,, Waterberg	1935	T. Baines.
Lobombo Mountains, Umbelosi Poort	Portuguese Boundary	1900	R. T. Hall.
Mauch's Limpopo Crossing, 1871	District Zoutpansberg	1780	C. Mauch.
Lobombo Mountains below Komati	Portuguese Boundary	810	Dr. E. Cohen.

* According to Erskine, 4781.

GEOLOGY.

Researches of Mauch, Hübner, Dr. Cohen, Dr. Holub, &c.—As no proper geological survey of the country, *as a whole*, has taken place as yet, I can only give an outline of the observations made by some of the travellers and explorers who have reported on the geological features of the regions visited by them.

From Mauch we obtained the first knowledge of the geology of some parts of the country. We have to thank him also for the first discovery of the gold at the Tatin,[*] which created so much sensation at the time, and was the commencement of the golden era that dawned upon South-eastern Africa. From Mr. Hübner, a German geologist and mining-engineer, the companion of Edward Mohr, we have a good knowledge of the western portion of the Transvaal through which he travelled, while to Dr. E. Cohen, the eminent lithologist, "Privat Docent" in the University of Heidelberg, for the first knowledge of the geology of the Marabas Stad and Lydenburg formations, and the prominent features of the region between the gold-fields and Delagoa Bay. With the result of Mr. E. I. Dunn's and Dr. Atherstone's geological observations during their flying visits, I am, unhappily, unacquainted.

In the account published of his travels during the years 1865–1872,[†] Mauch speaks of the northern slope of the Witwaters Rand Plateau as being formed of rocks belonging to the silurian and metamorphic periods. The Magalies Berg he found to consist of white quartzite, which changes between compact and granular texture. The strike of the principal strata is from east to west, with considerable dip towards the north. Mauch found no fossils, but metalliferous veins, such as copper-pyrites, and thick layers of magnetic iron-ore. In the hill-ranges towards the east of the Rustenburg Flat, he observed a porphyritic formation and diorite, intersected with white felspar and leek-green hornblende. Speaking of the "Highveld," he fancies, from slight impressions of ferns on the surface of the sandstone-layers near the mouth of the Zuikerboshrand River, that we have to do here with a coal-formation. The primitive rock shows itself as granite and gneiss on the eastern heads of the Limpopo River. These are joined from the north by steep-raised, reddish-coloured, silky-shining, finely-stratified, mica-schist, capped with clay-slate, but principally quartzite and sandy graywacke-slate. These lower silurian rocks may be followed as far to the west as the Marico District, but there the clay-slates appear much thicker. Graphite and slate, containing crystals of chiastolite, are also well developed in some places. Above this graywacke formation is a layer of blueish silicious limestone, of vast extent and considerable thickness, but throughout horizontal, showing thinner and thicker strata of dark or smoky flint.

After describing the "cave" at Wonderfontein, near the sources of the Mooi River, on the main road from Pretoria to

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[*] On the 28th July, 1867.

[†] Carl Mauch's "Reisen im Innern von Süd Afrika," 1865–1872. Ergänzungsheft No. 37 zu 'Peterm. Geogr. Mittheilungen,' Gotha, 1874.

Potchefstroom, Mauch continues: "This limestone formation which I must call Devonian, extends as far as the Higher Marico District, even as far as Lattaku (Kuruman) beyond the Harts River; some spurs are met with on the Middle Marico River, and at the junction of the Schoen Spruit with the Vaal."

South-east of Potchefstroom there is a range of small hills consisting of a dark-gray or black rock, containing white zeolite, which might be called amygdaloid porphyry. Within this group is an old mine in clay-slate, containing variegated copper-ore, but nobody knows who have been the miners. In this neighbourhood we also notice greenstone for the first time, extending far south-west along the Vaal, increasing gradually in thickness towards the diamondiferous region, but changing afterwards in texture, stratification, and accessory minerals.

Mr. Hübner gives us the following geological synopsis of the territory explored by him from Potchefstroom to the Tatin in 1869:*—

We must call this part of South Africa geologically poor, as it shows formations which have only small scientific interest. Volcanic rocks are not captivating in a lithological point of view, metamorphic rocks as everywhere a closed book, and poor in useful minerals besides, and the few sedimentary rocks cropping up in the north and south of the country are destitute of fossils. What we can gather from the incomplete substratum is the following:—

The geological structure can be defined in a few words: round a granite core, the periphery of which does not appear to be a simple ellipse, but a many-limbed curve, lies a mantle of metamorphic rocks, which have been frequently fractured and intersected by greenstone; older sedimentary formations appear in one place in the south and again under 20° s. lat.

The granite is of mineralogical interest only in places where it forms a scarce variety with tile-red felsite (at the Limpopo); everywhere else it shows its normal composition: flesh-coloured orthoclase, colourless quartz and black mica, nowhere distinguished by accessory minerals (with the exception of red copper-crystals at Lee's farm on the Mangwe), or by metallic veins.

The metamorphic rocks form a great variety: gneiss, white-stone, hornblende, ferruginous mica-slate, clay-slate, chlorite-slate and granular limestone; and frequently they contain metallic minerals in other places,—here they appear nowhere to

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[*] "Geognostische Skizzen aus Süd-Ost Afrika," von Adolf Hübner, 'Peterm. Mittheilungen' for 1872, part xi.

contain important metallic beds. Of the oldest among them we may first mention the gneiss. Its extent is remarkably limited, and it must be supposed that a good part of it must have been destroyed again after being shattered. We are led to believe this from the numerous gneiss-fragments appearing in the granite of the granite hills near Shoshong and on the Mahalapsi. Transitions of gneiss in the granite through gneiss-granite may be observed between Tati and Shasha. The absence of mica-slate, so often playing the mediator between granite and clay-slate in other places, is remarkable; the quartzite rendering a peculiar character to a landscape by its long rugged mountain ridges, as, for instance, near Potchefstroom and Rustenburg, originates no doubt from sandstone, as can be seen sometimes from its transitions, but it shows itself nowhere as the last of a series of transformations from gneiss, in which felspar and mica gradually recede. The sandstones appear to overlap quartzite, and on the Limpopo only do they lie direct on granite. Ferruginous mica-slate shows itself at the Tatin as a formation overlying chlorite-slate, and becomes interesting as it appears in the vicinity of auriferous strata. The chlorite-slates show no transitions in the formations in which they are bedded, but stand unconnected everywhere: such is the case in the gneiss on the Shasha, and the same in the larger chlorite-slate region on the Tatin, where quartzite and sandstones form their beds, and ferruginous mica-slate the top layer. The granular-crystalline sandstone, which is mostly imbedded in metamorphic rocks, appears also in the Transvaal, but gives no clue, and the interest attached to it on account of its accessory minerals must remain unsatisfied. The levelling atmospheric influence has made the surface where it crops up almost completely flat, rendered conspicuous by a regular even-undulating contour.

Although the greenstones claim the attention of the geographer, as they form whole chains of mountains near Shoshong and Rustenburg, and thus constitute a considerable portion of the region between Potchefstroom and the Inyati, yet they are important neither to the mineralogist nor the geologist, as they consist mostly of a compact conglomerate of oligoclase and hornblende, and seldom form varieties in stratification or texture. They appear to belong to the igneous rocks discovered by Livingstone in Central Africa, called by him "trap" or basaltic rock; there they form igneous dykes in the large central valley, which takes the place of the original freshwater basin, but they are quite different from the greenstones which he observed between the Victoria Falls and Tete, where they glaze clay-slate (porcellanite), and intersect coal-bearing stone (as near Chicova); the same as with the amygdaloid of the English, which also crops up in the great central valley mentioned above, and of which I found a large horizontal bed in the Diamond District on the Vaal River.

The formation of the Pilandsberg, which must certainly be reckoned among the greenstones as an igneous bed-rock, for it contains clay-slate and granite, not otherwise found in other greenstones, deserves the most attention.

The sedimentary rocks appear for the first time in lat. 23° 30′ s. and long. 26° 40′ E. between the Serorume and the Limpopo. They are slightly upheaved sandstones; their age cannot be properly determined on account of the imperfectly-preserved remnants of plants, but very likely they belong to the Karoo formation. The same may be assumed of the rather brittle, horizontally-stratified sandstones in lat. 20° s., and long. 29° E. which show petrified woods. Are these latter perhaps of the same age as the sandstones which Livingstone found at Pungo Andongo (lat. 9° 40′ s., long. 15° 30′ E.), at almost the same altitude, viz., 4000 feet, and in which he found petrified palms? Or those near Tete (lat. 16° 10′ s., long. 33° 35′ E.) at an altitude of 1500 feet, which show horizontal layers of coal covered by a strata of petrified palms and coniferæ?

As it is always of interest to separate the igneous and the metamorphic rocks according to their respective ages as far as it is possible to do so, I will not omit to specify some of the groups of the formations existing between Potchefstroom and Inyati (so far as they are no acknowledged sedimentary rocks), to which a different age may be assigned:—

1. The oldest formations appear to be hornblende, gneiss and granite-whitestone, for they are the only metamorphic rocks (except the latter, which occurs at the Seruli in alternate layers with the first mentioned) which appear as dykes in granite.

2. Younger than these is doubtless the granite at the Mangwe, where it shows strata of hornblende, and the granite at the Mahalapsi, where it shows dykes of gneiss.

3. Next follow unstratified, mostly coloured quartzites (black, green) which nowhere occur enclosed in granite, but mostly overlie the latter, as, for instance, at Ramaqueban, where a black quartzite forms the highest mountains in the country, and also between the Kumalo River and the Shashani;

4. Younger than all the previous we must classify the red Pilandsberg igneous rock, showing protrusions of clay-slate and granite, as also the greenstones intersecting the granite at the Limpopo. Perhaps we must add to these also the greenstones penetrating the granite formations between Mangwe and Inkwesi, and at the Shashani. Concerning the classification

of the Rustenburg and Shoshong greenstones we can likewise only form suppositions, as they show no protrusions, nor was it possible for me to observe whether they penetrate the metamorphic rocks or are covered by them. Their lithological similarity with the greenstones of the Orange Free State and Natal, which penetrate a thousandfold the Karoo formation, renders it very likely that they also belong to this last group.

Dr. E. Cohen thus reports on the geological features of the country near Marabas Stad, and the region between Lydenburg and Delagoa Bay:—

*Marabas Stad.**—Coming from Pretoria, after passing the deserted village of Potgieters Rust (Makapans Poort), we enter the region of an immense system of metamorphic slate. The dip and strike change a good deal, as cannot be expected otherwise in contorted and flexured strata, but on the whole a strike from east to west can be observed. The strata are very steep; the dip (principally to the north, but sometimes to the east or west) varies between 35° and 39°. In petrographic relation these formations vary considerably, as is mostly the case in compact metamorphic strata. Among a series of formations we will mention talcose-slate, chlorite-slate, ferruginous mica-slate, clay-slate, amphibole-slate, rocks similar to sandstone, and a very characteristic rock-formation of great extent, the so-called calico-rock, formed by alternate layers of quartz and iron-ore. The separate layers are mostly very thin, but at Yserberg (Ironhill), the top of which principally consists of this formation, the iron-ores increase considerably in some parts and are worked by the natives. They consist principally of hydrate of iron and lepidokrit, which minerals have originated very likely from magnetic iron. Here and there between the strata of the metamorphic formations appear middle-grained diorites with globular-shaped nodules. These are lithologically so distinctly divided from the former that I must consider them intrusive dykes. The basis of the system of metamorphic slates is formed by granite which rises in several small hills on the road from Eersteling to Zebedeli's Kraal. The granite is blueish-gray, mostly close-grained, and consists of light felspar and quartz, and dark magnesian mica. Diorites closely resembling the above-mentioned appear also in the granite in the shape of dykes. If this observation is correct, it would be a decided proof of the intrusive character of the diorite.* This older granite must not be mistaken for such formations which sometimes adopt a structure similar to granite, and which belong to the series of metamorphic rocks. The slates are discordantly overlapped by a very hard and compact sandstone, of great abundance in the Transvaal, which, on account of its quartzose appearance, is mostly taken for quartzite. This formation is called Lower Devonian on the newest map of Petermann, but I do not know on whose authority. However, I do not doubt that we have to do here with very old formations. In the south-west follows hard silicious limestone, rich in layers and nests of quartz varieties. The limestone overlays the sandstone, and is similar to that found on the Kaap (Griqualand West). In the south of the Transvaal, formations are also found which agree so exactly with this limestone that one can hardly doubt that it is the same formation; but as yet I have not been able to obtain a true notion of the nature of the strata appearing in the extensive region lying between.†

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* 'Neues Jahrbuch für Mineralogie, Geologie und Palæontologie,' 1873. 'Mittheilungen au Prof. G. Leonhard,' by Dr. E. Cohen, dated Pretoria, 16th March, 1873.

Until now only such quartz-reefs have proved auriferous as appear in the metamorphic slates; the numerous reefs in the granite seem to contain no gold. There the quartz-reefs follow, where they can be ascertained without doubt, the strike of the slates. For this reason they extend mostly from east to west. If the slates strike locally north to south, it is the same with the quartz as at Mont Maré near Marabas Stad. A very interesting spot is to be found in the neighbourhood of Eersteling. Here an auriferous reef (Pigg's Reef) runs h. 12; if one follows the reef to the south, it disappears suddenly, and the slates then strike east to west. Unfortunately the clue (*aufschluss*) is rather insufficient. The quartz is very changeable in its outward appearance; sometimes very compact, close and clean, then full of cavities, easily broken, and richly imbedded with iron-oxide-hydrate; then again, white and greasy shining, blueish-gray and glassy. Sometimes it contains many rock-enclosures (protrusions) as is the case at Mont Maré. Even in one and the same reef the physical properties of the quartz are not always the same. The appearance of gold is also different in the places where it is found. In Button's Reef, near Eersteling, pieces containing gold are observable with the naked eye; some are quite covered with larger closely-joined pieces. The gold in the Mont Maré Reef is spread in such fine particles that it is difficult to discover a small flake with the naked eye. As the machinery is only expected in some months, nothing can be said regarding the yield. The information obtained so far has been gained from picked specimens, not from any average sample taken from the main reef, which is about 3 feet thick. The principal questions: Will the reef maintain its quality lower down? and Whether the gold is found on the whole reef as far as it is known to extend (about 2½ miles)? can only be answered when the mining operations have more advanced.* At present the quartz is only brought to the surface in two places, and the greatest depth amounts to 30 feet. Besides the gold, I have found iron-pyrites, copper-pyrites, malachite, silver-glance or richly argentiferous galena, and iron-glance in the quartz, but only in small quantities.

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* Mr. Davis, assistant to Prof. Maskelyne, gives the following report on the rock specimens forwarded to him by Mr. Dunn:—

"'*Eersteling,' North and South Dyke.* A dolerite with much augite and little magnetite.

"'*Eersteling,' East and West Dyke.* Diabase includes hornblende, much dolerite; felspar apparently altered."

† In the 'Geognostische Skizzen aus Süd-Ost Afrika,' von A. Hübner, published in 'Petermann's Geogr. Mittheilungen' for 1872, I have looked in vain for any statements throwing light on the nature of the strata referred to. Hübner seems inclined to class the sediments in the north of the Transvaal under the *Karoo* formation, under which people in Africa are fond of classing everything that is not quite clear; the same as lithologists often class formations of doubtful origin among the *greenstones.—Note* of Dr. Cohen.

Alluvial gold has also been found in the neighbourhood of Eersteling and Marabas Stad to a small extent. For reasons explained by Dr. Cohen in the publication referred to, alluvial gold will never be found in this locality in payable quantities.

The Region between Lydenburg and Delagoa Bay.—In Dr. Cohen's valuable and most interesting work,† it will be found that he divides the territory between Lydenburg and Delagoa Bay into three distinct plateaux-terraces; the more so, he says, "as with the alterations in the level are closely combined differences in the irrigation, timber, fauna, and geological combination."

These three plateaux are:—

1. *The High Mountain Country* broken by many ravines and valleys between Lydenburg and the steep ridge descending 3 miles east of Spitzkop, in a straight line 26 miles broad. It contains an immense formation of clay-slates with stratified sandstone ledges, capped here and there by dolomite; it is wild and bare of wood, but rich in running water. Only in the

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* I am able to state here, that since Dr. Cohen visited Eersteling, suitable and powerful machinery has been erected there at a considerable cost to the company; that the reef has proved a very good one, and that the quartz is yielding now (May, 1876) from 4 to 4½ ozs. per ton.

This yield has, subsequently to May, 1876, almost entirely ceased, and cannot now be worked with profit.—November, 1877.

† 'Erläuternde Bemerkungen zu der Routenkarte einer Reise von Lydenburg nach den Goldfeldern,' &c. Von Dr. E. Cohen. Hamburg, L. Friedrichsen and Co., 1875.

immediate vicinity of Lydenburg farms are scattered about; the rest of the country is totally deserted, or very partially inhabited.

2. *The Mountain Country* between the first plateau and the eastern slopes of the Lobombo Mountains, divided into four intermediate belts. Crystalline are almost the only rocks found here, chiefly granite; and on the eastern slope, melaphyre and quartz-porphyry. A great part of this territory is very rich in game and mighty trees, which accumulate here and there into a forest. The existing water is mostly running; besides spruits and small rivers there are two considerable streams, the Ingwenya, or Crocodile River, and the Umkomati to pass. Beyond the Ingwenya, scattered branches of the Amaswasi tribe occupy the mountain country; to the north-west of this river the country is quite uninhabited. The whole zone has in the direction of the road a width of 74½ miles.

3. The *Coastlands* between the Lobombo Mountains and the Indian Ocean. Only in the western portion appear low hill-ranges of porphyry and melaphyre. The otherwise very level country is covered with black, marshy soil (the *turf* of the Transvaal boer), in some parts covered with recent sea-sand. Palms appear, which give a tropical appearance to the vegetation; and the country is moderately studded with trees of middling size, similar in character to the Bush Veldt on the elevated plateau of the interior of South Africa. Very little game is met with, and only standing water (at least during the winter). The seaboard is free from the tsetse. The atmosphere is very close, even in winter, and the change is soon felt after descending the Lobombo Mountains, only a few hundred metres high. This last terrace is about 39 miles broad, and is mostly inhabited by the Amatonga.

For a detailed description of these different terraces I must refer the reader to the work published by Dr. Cohen.

DR. E. HOLUB'S *Travels.**—The account of Dr. Holub's trip from the Diamond Fields *viâ* Christiana, Marico, and Shoshong, to the Zambesi, as far as published, gives only a rough sketch of the geological features of the region traversed by him. Concerning the so-called "ruins of Mosogra," between Christiana and Bloemhof, which caused some sensation at the time of their discovery, I find that Dr. Holub agrees with Dr. Cohen and Mr. Dunn, who visited the place before him (the former in January, 1873), that the "ornaments found at the saltpan, supposed to be the remnants of old buildings, are not formed by human hand, but by some strange freak of nature." He gives no reason for this assertion as Dr. Cohen does in a letter addressed to Professor Leonhard, published in Germany.* He mentions the discovery of a copper-mine at Malmani Spruit; rich iron-slate he found close to the sources of the Matebe, one mile to the west of Moilo; while as one of the "most productive places in ores" he names a certain farm on the sources of the Notuani. He says further:—"My explorations in the District of Marico have convinced me that this must be the richest district of the Transvaal, not only in metals, but also in regard to the fertility of the soil; the whole region enjoys a superabundance of springs and spruits, promising a better future to this part of the country than all the auriferous wealth of the other districts."

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* "Dr. Emil Holub's Reise in Süd Afrika" (March to September, 1875); published in 'Petermann's Geogr. Mittheilungen,' 1876, part v., p. 172.

Dr. Holub was prevented from exploring the gold-mine which he knew to exist in the Dwarsberg Range, but he saw "quartz gold, the same as is found in Tati," in the hands of a boer living in that locality. The geological formation of the Bush Veldt he describes as similar to that found in other parts of the Transvaal: viz., gray limestone, felspatic and quartz rocks, and rich iron-slate beds. In a few places the gray limestone shows on the surface, and the rocky parts of the lower hills are overlaid with deep red quartz, either rich iron-sand or white lime-sand. In the northern parts of the Bush Feld, in the bed of the Betchuana Spruit, are dark-slate beds rich with mica. The same gneiss and granite rocks, and also very rich quartz with gold-shining mica, reddish slate, rich in different kinds of metals, and red quartz rocks, are to be found on the banks of the Groot Marico, north of the Bush Veldt. The last-mentioned rocks are also found along the Limpopo River, covered with red quartzic, gravelly, hard sandstone; these again, in many places, are overlapped with soft sandy stones. The line of saltish ground, or salt, containing river-beds and saltpans, is nothing more than a continuation of the line between Christiana, Bloemhof, the Kunynana Hills, and Malopo River, from whence, I believe, it runs N.W. to the Kalihari Desert, and from there N.E. to the Serorume. The geological formations of such places, which contain rich salt, consist of very soft, white sandstones, and like that of Klame's Saltpan, two beds of vertical and horizontal white Karoo shells.

In conclusion, we will mention here, that Dr. Holub claims to have discovered an outlet of the Zouga River to the Shasha, "when its waters become sufficiently high," but this outlet we find already marked on some old maps, as, for instance, on one by the late Mr. McQueen, published in the 'Royal Geographical Journal,' 1862.

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* 'Neues Jahrbuch für Mineralogie,' &c., 1873: Briefwechsel. Dr. Cohen to Prof. Leonhard, Pretoria, 23rd January, 1873.

METALS AND MINERALS AND MINING OPERATIONS IN THE GOLD, COBALT, AND LEAD MINES OF THE TRANSVAAL.

The knowledge of the considerable mineral wealth of the Transvaal becomes more and more developed every day through the scientific researches of travellers exploring the country in all directions, and the mining operations successfully carried on at present. The principal minerals found are gold, copper, lead, cobalt, iron and coal.

Gold.—The first traces of gold within the limits of the Transvaal were found by Mauch in July, 1868, on the north side of the Olifants River, near the Murchison Range, visited two years later by Button. On the 31st August, 1871, E. Button discovered auriferous quartz and alluvial deposits at Eersteling, between Makapans Poort and Marabas Stad, where mining-operations were carried on for some time. On the 6th February, 1873, the first alluvial gold was discovered near the Blyde River, in the District of Lydenburg, by Messrs. Parsons, McLauchlin, and Valentine; and on the 14th May following, the locality was officially proclaimed as a payable gold-field by the Transvaal Government. Since then, auriferous quartz-reefs have been discovered in different parts of the country, viz., in the District of Waterberg, on the farm "Buffelspoort" not far from Nylstroom; at Blauwbank (Witwaters Rand); on the Crocodile River, south of Lydenburg; in the Amaswasi Country, not far from the line of the projected railway which is to connect Delagoa Bay with New Scotland; at the sources of the Schoen Spruit, in the District of Potchefstroom; in the Dwars Berge, District Marico; and in July 1875, alluvial gold was found on the town commonage of Pretoria.

Copper.—Several of the varieties of copper-ore, such as copper-glance, copper-pyrites, and variegated copper-ore, are found in the different parts of the Transvaal, particularly in the Districts of Lydenburg, Zoutpansberg, Pretoria, Rustenburg, and Marico. The latest discoveries we have heard of are at Malmani Spruit (Marico), and another 10 miles west of Pilgrim's Rest. All of these appear to be old workings, excavated to a depth of from 20 to 40 feet, probably by Kaffirs. A variety of copper ornaments are worn by the natives in the northern parts of the Transvaal, made by themselves; and we have seen beautiful specimens of almost pure ore smelted into ingots and bars by the natives of Zoutpansberg. None of these mines have been worked by white labour, and nothing can therefore be said as to their probable value or yield. The country round the Kaffir chief Palamboro, north of Olifants River, is said to be particularly rich in copper-ores.

Lead.—An abundance of galena is found in all parts of the Transvaal, and some of it is rather argentiferous. It is found mostly in the Districts of Lydenburg, Pretoria, and Marico. In the latter district, mining operations have been carried on for some time.

Cobalt.—Cobalt-glance was discovered by Mauch in 1871, on the banks of the Salons River, a small stream flowing into the Olifants River, north of Middelburg. It is said that traces have also been found in Marico, Rustenburg, and Zoutpansberg districts.

Iron.—All the varieties of this ore—iron-glance clay, ironstone, brown iron-ore, magnetic iron, &c.—are found in the different parts of the Transvaal; but the ores are only used by the natives in making weapons and ornaments. Some of the iron is equal in quality to the best Swedish.

Coal.—The existence of immense coal-beds must be considered the principal wealth of the Transvaal. The whole of the south-eastern part, from the Natal boundary through the districts of Utrecht and Wakkerstroom, as far as New Scotland, and even higher up, is one extensive coal-field, branching off to the east as far as Hlafunga's Kraal, near St. Lucia Lake, and to the north-west as far as Steenkool Spruit (about 57 miles S.E. from Pretoria), and south-west, across the Buffalo and Klip Rivers into Natal and the Orange Free State. The coal on the Belela's Berg, between Wakkerstroom and Utrecht, cropping out on the face of the mountain in a seam of more than 10 feet thickness, is of very superior quality, and is extensively used for the household and smithy; and to the farmers living on the elevated plateau at New Scotland, and along the High Veldt, where wood is scarce, it is almost the only fuel used. Concerning the qualities of this coal for steam purposes, we subjoin the following Report of Mr. Wilson, Superintendent of Gasworks, Capetown, taken from a Colonial paper:—

Transvaal Coal.—Mr. Wilson, Superintendent of Gasworks in Capetown, has analysed two samples of Transvaal coal. One sample taken down by Mr. Watermeyer he considers very good for gas-making and domestic use, but not as good as Welsh coal for steam. The other sample was taken down by the President, and yielded no less than 78·20 per cent. carbon and only 7·20 per cent. ash, very nearly assimilating with the Welsh coal used on the Cape Railway line, which yields 81·0 per cent. carbon and 6·40 per cent. ash. Mr. Wilson is highly satisfied with this result, and says that "this extensive ten-feet seam, cropping out as it does on the face of a mountain-range (in the Utrecht district), will ultimately prove of greater value to the State than any gold or diamond field. All that is wanted is an easy outlet and cheap transport to the coast, then farewell to the importation of Welsh steam-coal."

FORESTS AND BUSH.

The traveller passing through the Transvaal from the diamond-fields to the gold-fields along the main postal route, or from Pretoria to Natal, will find the country rather poorly wooded, only patches of the common mimosa-thorns appearing here and there to break the monotony of the extensive plains. But in the more mountainous parts—Marico, north of Magalies Berge, Pretoria, and Lydenburg—the bush becomes more dense, and contains some fine timber of considerable size and value. In some parts of the Transvaal, such as Utrecht, and all along the eastern slopes of the Drakensberg Range up to Zoutpansberg, there are forests of no mean extent or trifling value. Unfortunately, nothing is done to arrest their total destruction and secure their growth in accordance with the principles of forest economy, culture and administration, practised in other countries.

The "Pongola Bush" covers about 6000 acres of land, a quarter of which has been reserved by Government for railway purposes. But a large extent of well-timbered country belongs to private parties. The value of timber sawn may be estimated at 3000*l.* per annum, but treble that amount in value of growing-underwood has been destroyed annually for want of proper supervision.* In consequence of this wanton destruction and waste, the bush is said to be nearly worked out, and the wood is only obtained high up on the "krauzes" and rocks.

We are told that there is a fine forest as yet untouched on the Lobombo range of hills, where the Pongola River passes through the mountain. It is called Inhlatakulu by the Amatonga, who live in that part of the country. There is an extensive Government Bush in the district of Zoutpansberg, known under the name of "Hout Bosch," which extends for miles and miles right into Matyatye's Country. The timber grows principally in the ravines and kloofs of the hills, like in Natal, and a splendid stream of water, called "Broeder Stroom," capable of working a large and powerful saw-mill, runs through the bush. There is another extensive "bush" where Sand River flows through the Zoutpansberg Mountain-range.

The so-called "Bush Veldt," stretching over the whole breadth of the country from Marico to Lydenburg, north of the 26th degree of latitude, also contains some valuable timber, but of smaller growth and value, such as the different Acacia species, the Boekenhout or Cape Beach (Myrsine), the Zuikerbosh (Protea), Kameeldoorn (Acacia Giraffaes), and numerous species of arborescent shrubs. The farmers inhabiting the southern parts of the Transvaal, particularly those living on the High Veldt, are in the habit of moving with their stock to the Bush Veldt during the winter season, where the grass remains green, affording splendid pasturage for cattle.

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* A sawyer paying a licence of 10*l.* per annum is allowed to cut wherever he likes, and finds it the most convenient.

The wanton usage of setting fire to the "veldt" at certain periods during the winter-months—a practice which either totally destroys or greatly retards the growth of bush and trees, while it does not improve the pasturage—is greatly to be deplored. The law is rather severe against this crying evil, but from some reason or other has not been able to prevent those conflagrations, which often cause the loss of life and property besides the destruction of timber.

The following tabulated list of the principal timber-trees found in the different parts of the Transvaal has been compiled from information supplied to the writer by Mr. Paul Maré, of Marabas Stad, and Mr. E. F. Rathbone, of Chirley Valley, near Utrecht, both residents for many years in their separate districts; while Mr. A. F. Schubart, the Curator of the Potchefstroom Museum, has kindly supplied a list of wood-samples presented to the Museum, which are marked (*) in the table. Where the proper botanical name was not known, Dr. Pappe's *Silva Capensis* has been consulted.

TABLE showing the PRINCIPAL TIMBER-TREES growing in the TRANSVAAL, and their PROPERTIES, &c.

Dutch and English and Botanical Names.	Colour of Wood.	Height of Stem in feet.	Diameter of Stem in feet.	Name of District where found.	Remarks.
1. Assagaai,* or Cape lancewood (*Custigia faginea*).	Reddish	20–30	2	Zoutpansberg, Lydenb., Utrecht, Rustenburg, Marico.	Extremely tough and elastic; used for wheel-spokes, tools, axe-handles, &c.
2. Bylsteel, or axe-handle ..	Whitish	30–40	1	Zoutpansberg	Tough and elastic; used for spokes, tools, handles, &c.
3. Boekenhout,* or African beech (*Myrsine melanophleos*).	Reddish brown	10–20	2	Zoutpansbg., Nylstroom, Lydenburg, Utrecht, Marico, Rustenburg.	Window-sashes and furniture, also wheel-spokes; looks well when polished; two species, red and white.
4. Borrie	Bright yellow ..	10–20	2	Zoutpansberg	Used for waggon-building.
5. Boschlemon, or bush-orange (*Grumella cymosa*).	Yellow	15–20	2	Zoutpansberg	Used principally for furniture.
6. Bitter Amandelen,* or wild almond (*Brabeium stellatifolium*).	Indian red, reticulated.	20–30	4	Zoutpansberg, Utrecht, Rustenburg.	Used for waggon-building; handsome when polished, fit for ornamental joiner's and turner's work.
7. Bosch Gorrah	Scarlet	15–20	2–3	Utrecht and Wakkerstroom.	The most beautiful wood for furniture; bark and wood contain a deep red dye, close-grained and elastic; used also for bows for waggon-tents.
8. Essenhout,* or Cape ash (*Eckebergia Capensis*).	Dark drab ..	15–30	4	Utrecht and Wakkerstroom.	Principally used for furniture; looks well when polished.
9. Ebenhout, or Cape ebony (*Euclea pseudo-baenus*).	Black	15–20	3	Zoutpansb., particularly in Matyatye's Country.	No bark, solid, heavy, close-grained used for furniture, ornaments, &c.

10. Geelhout Outeniqua,* or yellow wood (*Podocarpus elongatus*).	Dark yellow ..	50–70	6	Utrecht, Wakkerstroom, Lydenburg, Zoutpsb., Rustenbg., and Marico.	Extensively used as timber, in the shape of beams, planks, floors, &c., also for furniture, waggon-wood, &c.
11. Geelhout Opregte, or upright yellow wood (*Podocarpus thunbergii*).	Yellow, dark and light.	50–60	4–6	Zoutpansbg., Matyatye's Country, Waterberg, Lydenburg, Rustenburg, Utrecht, and Wakkerstroom.	The most common tree in all the bushes of the country, in several species, used for beams, planks, flooring, waggon-building, &c. (*one* tree lately cut in the Pongola Bush gave thirteen loads of timber).
12. Hoenderspoor,* or Doornpeer or Cockspur (*Phoberus Zeyheri ?*).	White	15–20	3	Zoutpansberg	Extremely hard, close and durable; used for waggon-building.
13. Harde Hout, or hard wood	Whitish yellow (sometimes reddish on one side and black on the other).	15	1	Matyatye's Country ..	Used for walking-sticks, tools, &c.
14. Kajaten Hout,* or Cape teakwood (*Canthium ?*).	Fine black ..	20	4	Zoutpansberg	Hard, tough, less brittle than oak; principally used for furniture.
15. Kastanie,* or wild chestnut (*Calodendron capense*).	Whitish	30	2	Zoutpansberg and Rustenburg.	Elastic, soft, and pliable; used for waggon-tent bows, rural utensils, &c.
16. Knopjes Doorn,* or Paardepram (*Fagarastrum capense*).	Yellow	8–10	10"–1½'	Rustenburg	Hard and close; used for yokes, axles, tools; the bark is studded with numerous large conical protuberances, or knopjes.
17. Koolboom Hout, or cabbage-tree wood.	Light yellow ..	15–20	2	Utrecht	Used for wooden vessels for domestic use, soft and woolly texture.
18. Mahogany	Yellowish-red ..	45–75	3	Matyatye's Country and beyond Limpopo.	Used for furniture; pods 9"×3", in which seeds lie in rows, black with scarlet point, on a white bed, oval shape.

TABLE showing the PRINCIPAL TIMBER-TREES growing in the TRANSVAAL, &c.—*continued.*

Dutch and English and Botanical Names.	Colour of Wood.	Height of Stem in feet.	Diameter of Stem in feet.	Name of District where found.	Remarks.
19. Nies Hout, or sneeze wood (*Ptaeroxylon utile*).	Whitish-yellow	30	3	Zoutpansberg and Lydenburg.	Used for waggon-building, little affected by moisture, when sawn or worked is said to produce violent sneezing; the wood is handsome, takes a fine polish, strong, durable, and somewhat like mahogany.
20. Olyvenhout,* or wild olive (*Olea verrucosa*).	Dark brown ..	10–12	1	Zoutpansberg and Rustenburg.	Compact and heavy, handsome when polished, admirably adapted for waggon-work, &c.
21. Peer (Witpeer*), or white pear (*Pterocelastrus rostratus*).	White	15-30	4	Utrecht, Wakkerstroom, Zoutpansbg., and Rustenburg.	Heavy, strong, similar to pear or apple tree; generally used for waggon-wood, fellies, &c.
22. Peer (Roodepeer*), or red pear (*Phoberos Ecklonii*).	Red	20–40	4	Zoutpansberg, Wakkerstroom, and Utrecht.	Heavy and close, used by wheelwrights for axles, fellies, and spokes; takes fine polish, fit for furniture, &c.; two species.
23. Peer (Hardpeer), or hard pear (*Olinia capensis*).	White	10–15	1	Utrecht, Wakkerstroom, and Lydenburg.	Durable and tough, adapted for spokes, axles, poles; resembles European birch.
24. Peer (Geelpeer), or yellow pear.	Whitish-yellow	10–15	1	Utrecht, Wakkerstroom, and Lydenburg.	Mostly used for furniture, &c.
25. Roodebessie, or red berry (*Pappea capensis*).	Yellow-brown	15–20	1	Utrecht and Wakkerstroom.	Hard and tough, but perishable if exposed to weather; well adapted for furniture, &c.

26. Roode Melkhout,* or red milk-wood (*Sideroxylon inerme*).	Light yellow ..	10–15	2	Rustenburg, Zoutpansberg, Marico, and Waterberg.	Very hard and durable, little affected by damp or moisture; used for mills and waterworks, ploughs, &c.
27. Roode Hout,* or red wood (*Ochnea arborea*).	Red tint	20–30	2	Rustenburg, Marico, Waterberg, and Zoutpansberg.	Heavy and tough, well suited for furniture, but chiefly used for waggon-poles, tools, axe-handles, &c.
28. Saffraan,* or saffron wood (*Elæodendron croceum*).	Reddish	20–30	3	Wakkerstroom, Zoutpansbg., Utrecht, and Rustenburg.	Bark covered with resinous yellow crust, fine grained, hard, used in waggon-building for long waggons, fellies; the bark is good for tanning and dyeing purposes.
29. Stinkhout Camdeboo,* or stinkwood (*Rhamnus celtifolia*).	Light brown ..	20–30	4	Zoutpansberg, Lydenburg, Waterberg, Marico, Utrecht, and Wakkerstroom.	Tough, used for planks, yokes, tools, gunstocks, &c.
30. Stinkhout (Witte*), white stinkwood (*Laurus bullata?*).	White	20–30	4	Zoutpansberg, Lydenburg, Waterberg, Rustenburg, and Marico.	Used for gunbutts, tools, &c.; called "*African oak*," although the true African oak is said to be the "*Oldfieldia Africana*."
31. Stinkhout, or cannibal stinkwood (*Oreodaphne bullata?*).	Light yellow with black core.	30–40	2–3	Utrecht	Waggon-wood, furniture.
32. Speker Hout	Pale red	15–20	2	Utrecht	Very durable in water or moist ground, very retentive of its sap; well adapted for railway-sleepers.
33. Salie, or Salie wood* (*Buddleia salviaefolia*).	Yellow	12–15	1	Zoutpansberg, Lydenburg, and Rustenburg.	Hard, tough, suited for waggon-work, gunstocks, tools, &c., rural utensils.
34. Tolbal	White	15–20	1	Zoutpansberg	Used for long waggons, &c.
35. Terpentyn, or Olifants Hout,* turpentine or elephant wood.	Yellow with black core.	20–30	2	Zoutpansberg, close to Limpopo.	Used for furniture, waggons. Elephants are said to be very fond of the leaves and pods.

TABLE showing the PRINCIPAL TIMBER-TREES growing in the TRANSVAAL, &c.—*continued.*

Dutch and English and Botanical Names.	Colour of Wood.	Height of Stem in feet.	Diameter of Stem in feet.	Name of District where found.	Remarks.
36. Umghni (Zulu) (English, Dutch, and Botanical name unknown).	Light yellow ..	20–30	2–3	Wakkerstroom and Amaswasi Country.	Very close-grained and tough, containing a resinous tar; well adapted for poles, spikes, &c.
37. Vyg, Wilde Vyg, or wild fig-tree (*Urostigma Nataliensis*).	Light yellowish brown.	50–80	4–6	Utrecht, lower part of Pongola, near Lobombo, Zoutpansberg, Rustenburg, Lydenburg, and Amaswasi Country.	Soft and woolly, tough fibre; does not shrink in drying or warp with the changes of the atmosphere; in some places grows to enormous size. There is a very large specimen found in the neighbourhood of Pretoria, called the "Wonderboom" on account of its unusual size.
38. Witgatboom (*Capparis albitrunca*).	White	10–15	1	Rustenburg, Waterberg, and northern parts of Pretoria.	Tough, used for yokes, and agricultural purposes. The root is used by the Boers as medicine, &c.
39. Yzer Hout,* or Tambooti, or iron-wood (*Olea laurifiora*).	Black	20–30	2–3	Zoutpansberg, Lydenburg, Utrecht, Wakkerstroom, Rustenbg.	Hard, close-grained and heavy, looks well when varnished; used for furniture, waggon-work, tools, &c.
40. Yzer (Wit Yzer Hout), or white iron-wood (*Asaphes undulata*).	White	20–30	2–3	Zoutpansberg, Wakkerstroom, Lydenbg., and Utrecht.	Hard, very tough; used for waggon-work, ploughs, and implements.
41. Zwartbast,* or black bark (*Rogena lucida*).	Whitish	15–20	1–2	Zoutpansberg, Waterberg, and Lydenburg.	Used for waggon-work; hard and tough, yellow tint with brown stripes when polished.

There are a great many other trees and arborescent shrubs, which are mostly used for firewood and other domestic purposes, such as Kaffir Wachteen-beetje; Aapjes Doorn; Wilde Serringen; Travenbosh; Spekboom (*Pterocelastrus typicus*); Katdoorn (*Scutia capensis*); two or three different species of Taaibosh (*Rhus*); Buffeldoorn (*Burchellia capensis*); and the common Wilgeboom (*Salix*); the latter mostly along the banks of the rivers in the southern parts of the Transvaal. The Baobab, or Cream-of-Tartar tree, is also found on the northern limits of the Transvaal, between the Blaauwberg and Zoutpansberg Ranges and the Limpopo. This tree grows to an enormous size. There are some very large ones on the Brak River, an affluent of the Sand or Hout, and we hear of one close to the Limpopo measuring 183 feet in circumference. The late Thomas Baines mentions three specimens he met with in the Matabele Country, of respectively 40, 50, and 63 feet in girth.

THE DELAGOA BAY RAILWAY.

With regard to the projected railway from Lourenço Marques to New Scotland, we subjoin the following Report, kindly supplied to us by R. T. Hall, Esq., C.E., who has made a flying survey of the line, and has been entrusted with the work by the Transvaal Government:—

"Lourenço Marques, the maritime terminus of the Transvaal Railway, is situate on the western shore of Delagoa Bay, in latitude 25° 58′ S. and longitude 32° 36′ 57″ E.*

"The railway commences near the shore at the north end of the town, under the hill, and, passing through a grove of tall coco-nut trees and luxuriant vegetation, skirts the shore for a short distance above the swamp which bounds the west side of the town, and then proceeds inland to the Matollo River, a small stream flowing into English River or the harbour of Lourenço Marques.

"The country between the town and the Matollo is extremely fertile, varied in its productions from rank vegetation to well-cultivated crops; the soil is sandy and slightly oxidised with iron. Tobacco, sugar, arrowroot, and cotton, in addition to cereals, may be grown throughout the district; but little advantage is taken by the natives of this favourable position.

"The Matollo is to be crossed by an iron bridge several miles from its mouth, where its contracted span offers a favourable site for the work.

"After crossing the Matollo the line trends south-west to the

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* According to Raper, lat. 25° 58′ 2″ S., and long. 32° 36′ 7″ E.

Umbelosi River, passing through a bushy country interspersed here and there with a few large trees of white-barked mimosa, and occasionally tall cactii may be seen taking advantage of the friendly support of their more stable brethren, while thick masses of creepers may be found in almost every large bush.

"At the kraal of the old Amatonga chief named Umbouaan (on the northern bank of the river opposite Bombei), the railway approaches within a short distance of the Umbelosi, about 18 miles from Lourenço Marques. To this point the river is navigable for shallow-built boats, and affords the opportunity, which the engineer has taken advantage of, to commence the railway at this point and carry on the work in both directions. Iron barges with a small tug are now on their way from Europe for the purpose of conveying the material from the ship's side in the Bay to this point.

"The country from Umbouaan to Lourenço is comparatively flat, but rather more undulating as the coast is approached; the gradients are easy, and work comparatively light.

"From Umbouaan the line runs for about 6 miles in a westerly direction to a small stream near Saguaan Hill, and here a bend in the Umbelosi brings the river again close to the railway. The river is now skirted for another 6 or 7 miles to the point of the Laboufaan Hills, a spur of the Lobombo Mountains. Here another small stream is crossed, and a pretty wooded country opens out to the Lobombo. The course is now tolerably straight, the Umbelosi, winding its way to the same point on the Lobombo, is far away to the south.

"The Lobombo Mountains are penetrated by the Umbelosi in a deep gorge, named Umbelosi Poort, and through this passage the river and railway run together. The scenery in the Poort is extremely pretty; the sides in some places being somewhat precipitous, and at others cleft by deep wooded ravines. The Poort is 7 miles long, and somewhere about its centre is the boundary between the Portuguese possessions and Amaswasi-land.

"Umbelosi Poort is 40 miles from Lourenço Marques, and in the Poort, about 44 or 45 miles from the Bay, the first section of the railway, or Portuguese portion, called the Lobombo Railway, terminates.

"The elevation of the railway is here about 400 feet above the sea, while the mountain towers some 1500 feet above it. In the Poort the railway crosses the Umbelosi on an iron bridge about 75 yards long, and on emerging from this mountain-gorge an open vista, extending to the Drakensberg, and prettily dotted with trees, presents itself, with an apparently unbounded flat on either hand.

"The railway now runs west through a fertile country, interspersed here and there with Amaswasi kraals and large mealie gardens. The railway works are light, and gradients easy. This portion of the country, as well as that below the Lobombo, abounds in game of great variety, but fearfully infested with the tsetse-fly. Buffaloes, blue wildebeeste, koodoo, and smaller varieties of the deer tribes, may be frequently seen; and lions, though rarely seen, are heard at night; occasionally, too, you see a fresh spoor of an elephant, but these animals are nearly all exterminated.

"At about 10 miles from the Poort, the White Umbelosi River is crossed by an iron bridge. This river is a branch of the Umbelosi, and joins the Black Umbelosi a few miles to the north; a further run of some 16 or 17 miles brings the railway to the first ridge, called Umleeba, which divides the upland and lowland countries. In crossing the ridge, a great change in the face of the country takes place. The fly is left at the ridge, and immediately on crossing it scarcely a bush or tree is to be seen. Kaffir kraals of the Amaswasi are seen here and there, and cattle abound in every direction, but not a head of game or wild beast is to be found.

"From Umleeba the country becomes more difficult for railway-making. Valleys run down on every side, but by keeping along the watershed between the White and Black Umbelosi, heavy works are avoided. The gradients sometimes become somewhat severe, rising to 1 in 50 and 1 in 45 for short lengths, until the foot of Uyskobane's Hill is reached, about 93 miles from the Bay. Here the ascent to the Drakensberg begins.

"The railway works now become very interesting from the frequent crossing of valleys by viaducts varying in height from 40 to 100 feet, necessitated by leaving the watershed and scarping round the hill-sides; gradients and curves are here steep and sharp. A gradient of 1 in 50 for about 4 miles brings us to the foot of the precipitous face of the mountain, which rises 1500 feet almost perpendicularly. The scenery becomes grand; huge irregular mountains bound the view on every hand but east. The line now runs north under the face of the mountain, and passes in round a brow abutting on the Black Umbelosi River, and at its terminus among the hills behind the mountain, attains a height of about 3600 feet above the sea, and a distance of about 108 miles from Lourenço Marques.

"The scenery here is very interesting, bounded on every side by mountains so locked together that it seems almost impossible to find a way through which a railway can be made.

Kraals now become very scattered and thinly populated; mealie gardens are very scarce, but cattle abound, and find good pasturage in the valleys and on sides of the mountains. The present proposed terminus is about 8 miles from Lotiti (Ditin), the late king's kraal, and about the same distance, "as the crow flies," in the south-west from Inkegaan, the kraal of the present Amaswasi king, Umbandeen, but to reach either a detour of some 20 miles must be made.

"To the proposed terminus a good road from the watershed between the Little Usutu and Umkomatie rivers, above the source of the Umbelosi, can be constructed at an inconsiderable cost, and when once the watershed is attained from the railway a good natural road exists to the interior.

"The further extension of the railway, which must sooner or later be made to render it available for opening up the coalfields in the neighbourhood of Klipstapel, can be readily carried out at an expense not greater than the mountain portion of the present railway, and that for a length of about 10 miles, when the watershed would be reached, and the railway cheaply and rapidly extended to any part of the Transvaal."

XI.—*The Desert of Atacama (Bolivia).* By JOSIAH HARDING, A.I.C.T.

THE part of the desert of Atacama in which I was engaged was principally the southern part of the coast province of Bolivia, between the range of mountains containing the silver-mines of Caracoles and the coast.

I was chiefly occupied as engineer in the construction of a railway from the port of Antofagasta to Las Salinas, for the "Antofagasta Saltpetre and Railway Company." The object of the railway was to convey "caliche" (nitrate of soda in its crude state) from the deposits in Las Salinas to the coast for the purpose of purifying it for shipment, I occasionally took journeys into unexplored parts of the desert in search of new deposits of saltpetre, when I invariably took my instruments with me for the purpose of connecting, by trigonometrical and astronomical observations, the position of any important point with my railway and other surveys. I was thus enabled to construct a complete map of the greater part of the country from the coast for 100 miles inland.

General Description.—In this part of the desert there are two distinct and principal ranges of hills lying between the coast and the Andes. The first, called the coast range, rises almost directly from the sea (in many places so abruptly as not to allow of a passage along the shore, but generally from a quarter to half a mile distant), to a height of 1820 feet as a minimum and about 6000 feet as a maximum. The former was the point selected for the passage of the Antofagasta railway.

After passing the coast range, the country rises with a tolerably uniform gradient, along the main valleys, to the range of Caracoles.

Between Caracoles and the coast there are many isolated groups of hills, the most important being Cerro Negro, which rises to a height of about 11,000 feet above the sea.

The Caracoles range rises first in a series of terraces, one behind the other, to a height of 8900 feet (where the town of Placilla is situated), and then more abruptly in peaks and ridges to a height of 10,000 feet.

Behind Caracoles are a few isolated groups of hills and small ranges, and then the great dry lake of Atacama at the foot of the Andes. This part of the country is very little known, and by me entirely unexplored.

Among the hills lying between the Caracoles and coast ranges there are many dry watercourses and lakes, which appear to have been formed by violent and sudden showers, and not by continuous rivers.

All the valleys have, at some remote period, had an exit to the sea, but many have become blocked up in the following manner. The mountains being nearly all bare rocks, the rapid variations of temperature cause them to splinter and crack, and fall away into heaps of angular stones. Violent storms of rain then sweep the gravel down into the valley, but have not sufficient force to carry it away to the sea, and, the valley being choked, the water from inland has no outlet, and so forms a lake. The immense amount of débris filling up the valleys in this way may be imagined by considering the state of things at the Salar del Carmen, where is situated a small establishment for the purifying of saltpetre. A well in the dry lake is 290 feet deep, and the bottom is still in alluvial deposit, whilst the outlet by which the railway passes, and under which is evidently the old bed of the valley, is 120 feet higher than the bed of the lake, or 410 feet higher than the bottom of the well.

The Geological Formation is almost entirely igneous: the greater part of the rocks being granite, and porphyry and granite, with, in the coast range, some metamorphic rocks. In Caracoles, where the silver-mines are, the formation is jurassic, with porphyry; the principal veins of ore having porphyry on one side, and limestone on the other. The existence of a large number of ammonites gave the name to the range—caracol meaning a spiral. I know of no other stratified rocks in this part of the desert.

Climate.—On the coast the temperature is very equable, varying in Antofagasta from a maximum in summer of 82° Fahr. in the shade, to a minimum of 52° in the winter. There are also usually two or three slight showers of rain fall during the winter, but seldom enough to wet the surface of the ground. The wind is almost invariably a gentle sea-breeze by day and a land-breeze at night.

Passing the coast-range, the climate changes wonderfully. In the Salar del Carmen, although only 6½ miles in a straight line from the sea, and 1700 feet high, the cold in winter is very severe, and the wind blows almost a gale every day. The heat in summer is not very great here, but it increases rapidly as you go inland. In Las Salinas. where are the principal deposits of nitrate of soda, the temperature is very variable, especially between night and day This is, I suppose, in a great measure owing to the very dry atmosphere and to the ground being covered with salts, which cause a very rapid radiation of the heat at night.

I had commenced a more detailed registry of the temperatures in Las Salinas, when my thermometers were destroyed by a whirlwind; but I have registered a minimum shade temperature, at 7 A.M. in the winter, of 7° Fahr., and at 11 o'clock the same day 98° in the shade, being a rise of 91° in 4 hours. In summer the shade-temperature ranges between about 40° at night and 130° in the day. I have frequently noted the temperature of the ground at 1 P.M. at 145° Fahr. The air is so dry that a piece of thick note-paper if folded and pressed with a paper-knife will break in two when opened out.

Dry as the climate now is, and has evidently been for geological periods, there is abundant evidence on the face of the country to show that violent rain-storms have taken place there, which, having nothing to absorb them, have rushed off in terrific torrents down the steep slopes of the mountains, rolling boulders of many tons' weight in their course. It is impossible to say how often these storms have occurred, but probably the intervals have been hundreds of years, and then they have been very local. One such storm happened near Pan de Azucar, in Chilé, about 30 years ago, when the torrent was so great as to sweep away some heaps of copper ore, a blacksmith's forge, some carts, and one woman. Although the storm only lasted a few hours, and the place was some seven miles from the sea, there was never a trace of these things found.

The hills in this district contain a few copper-mines, but they are not of much importance. The only export worth mentioning, besides the silver of Caracoles, is the nitrate of soda, which exists in several places, the principal being Las Salinas, where the "caliche" is of excellent quality, ranging from 30 per cent. to 80 per cent of nitrate, and is in some places 12 feet in thickness.

It is found in a bed extending over the ground and following all its undulations, generally covered with a crust containing a large proportion of sulphate of zinc and common salt, which varies in thickness from 1 to 6 feet. Guano, birds' feathers in excellent preservation, and even some skeletons of birds are found in the caliche, sometimes at a depth of 10 or 12 feet from the surface of the ground. These things, and many others too numerous to mention, lead me to support the theory advanced by the best chemists on the coast, that the nitrate of soda has been formed from a mixture of guano with seaweed when this part of the country was at the sea-level. As the deposits of Las Salinas are 4000 to 5000 feet above the sea, this must have been many thousands of years ago.

There is no *fresh* water south of the river Loa, so that all the water required both for men and animals has to be distilled from the sea or from water obtained in wells. Even that used in the locomotive engines of the Railway Company is distilled from the sea in Antofagasta, and carried all the way (80 miles) to Las Salinas for the double journey.

This part of the desert, excepting the town of Cobija, has been populated within the last nine years.

The figures on the map give the heights in feet above sea-level. Dry lake-beds are coloured brown.

XII.—*The Kingani River, East Africa.* By FREDERICK HOLMWOOD, Assistant-Political Agent, Zanzibar.*

THE Rufu, or Kingani, had long been classed among those hopeful-looking East African rivers which it was trusted might become highways to the interior, but like the Rovuma, the Wami, and others of these streams that have been explored, it has been found—though not absolutely unnavigable—not to fulfil the expectations inspired by the appearance and extent of its waters.

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* Mr. Holmwood's observations on the Kingani, from another Report written by him, appeared in the 'Proceedings of the Royal Geographical Society,' vol. xxi., p. 499, in a paper read by Mr. Edward Hutchinson.

The following brief summary from notes made respecting this river during the three weeks occupied in ascending about 120 miles of its serpentine windings, is forwarded at the special request of Lieutenant Shergold Smith, R.N., the leader of the Nyanza and Uganda expedition, who had been instructed to make the exploration of the Kingani himself, but was prevented from doing so by fever, and who begged me to send my map and account of the journey, which I undertook for him, to the Royal Geographical Society.

The map, though made with the utmost care, pretends to be nothing more than a sketch by dead reckoning, the only point fixed by observation (namely, the junction of the Lungérengère) showing an error of about 4 miles in my reckoning, at that station.

Our party, consisting of Mr. Mackay, mechanical engineer to the Uganda Expedition, Mr. Hartnell, mate and coxswain, and myself, accompanied by twelve natives under the veteran Bombay, left Zanzibar in the Church Missionary Society's yacht, *Highland Lassie*, on the 6th of July last, having in tow the steam-launch *Daisy*, in which we were to ascend the Kingáni. Anchoring for the night just outside the harbour, we ran across to Bagamoyo the next day, and met with the usual kind reception from Père Etienne and the French missionary fraternity at that place, who, moreover, obtained for us the services of a Mkami and Mzaramo, who professed to have some knowledge of the higher part of the river we were about to explore.

Just now, when interest is being directed in a special manner to East Africa, and plans are likely to be formed for improving the communications with the interior, a few remarks on the town of Bagamoyo and the two main caravan roads which end there, after skirting the respective banks of the Kingani for a considerable distance, may not be out of place as prefatory to the main subject of this Paper.

Bagamoyo is situated on the mainland nearly opposite the city of Zanzibar, in lat. 6° 26′ S., long. 38° 58′ E. It has been for many years the starting-point and place of arrival of the Unyamwezi caravans, and also of the several expeditions organised at Zanzibar for the exploration of Central Africa.

The town has rapidly increased of late, and now has a population of about 10,000 inhabitants; but, like many of the coast towns in the Zanzibar dominions whose sites have been selected only for their convenience with reference to some caravan route, the place is particularly unsuitable in other respects for a commercial port. It has no harbour, and the roadstead affords by no means convenient anchorage. Ships must lie about 1½ mile from the shore, and even boats cannot approach within half a mile except at high water, the beach at low tide being a flat expanse of adherent mud, interspersed with jagged rocks of dead coral and patches of decaying mangrove-root.

Both the town and adjacent country are particularly unhealthy, owing to the immense expanse of low plain and mangrove swamp, always more or less inundated, stretching for miles on both banks of the Kingani, which enters the sea 4 miles N.W. of the town. The miasma from these Kingani swamps is peculiarly virulent, and bilious-remittent of a special type is prevalent in the neighbouring districts during a great part of the year.

Two main caravan routes enter Bagamoyo, known as the Kutu and Msuwa roads; both have been fully described by Burton, Speke, Cameron, and Stanley. The former, however, owing to repeated acts of robbery and violence on the part of the Wazaramo, through whose country it passes, was virtually closed soon after Speke's last journey; and although the power of the Wazaramo, as a nation, has, since the last Maviti invasion, sunk to the lowest pitch, a bad repute still attaches to the country, and few Unyamwezi caravans have returned to this route since they left it for the Msuwa road, which has become an established highway.

The Kutu road is still that of the Urore caravans, and that branch of it leading to Konduchi and Dar-es-Salaam is also used by occasional traders; but the country of Kutu itself, including the town and district of Zungomero, was some years ago almost totally destroyed and depopulated by the Maviti, and a small number of caravans suffice for the present trade with the more remote district.

There have been difficulties lately with chiefs on the Msuwa road, but this highway is far too profitable to them to be lightly closed to travellers, and it is much more likely to fall into disuse through European exploration and enterprise opening up better routes.

Whilst the Msuwa road traverses the low hills bounding the valley on the left bank of the Kingani, gradually leaving them where they intersect those forming the valley of the Lungérengère, the Kutu road follows those on the right bank, which in many places approach the river itself. This road does not leave the neighbourhood of the river until it stands off to the Mgeta stream, about 70 geographical miles rectilinearly from Bagamoyo.

It was as a substitute for that portion of these two roads which, passing through a low maritime region, is both difficult marching and dangerous camping-ground, that the water-routes of the Wami and Kingani were proposed by the liberal and public-spirited promoters of the Uganda expedition, who had a costly steam-launch constructed especially for their examination: and it seemed clear that if both or either of these rivers should prove to be navigable even for 100 miles, they would become most useful adjuncts to the route to Unyanyembe and the interior generally; the saving of property—and probably life—which would be effected by transporting (as was proposed by this Society), some 500 porters with their loads and their six English leaders by water over the most unhealthy and difficult portion of their journey; and moreover their conveyance, without fatigue, past about fifteen marches, and those the first from home—always the most trying for both men and leaders—would alone much more than repay a large outlay for suitable steam vessels, more especially as this was not to be an isolated expedition, but the advanced guard of an enterprise which would always have to keep in view the establishment and maintenance of communications with the coast.

Lieutenant Shergold Smith, R.N., ascended the Wami for about 40 miles, but found that river impracticable for any useful purpose, as Dr. Kirk had long before foretold would be the case, from observation of the lower stream at different seasons.

The Kingani was known, however, to possess some important feeders, and it was long supposed that the Mukondokwa, which has been observed as an important stream close to Mpwapwa, added its waters to this river—some even supposed it to be the parent stream,—whilst the Mgeta, entering some 30 miles higher on the right bank, had been reported on by Burton, Speke and Grant as a considerable influent.

From the instructions received by Lieutenant Smith, it was evident that, though geographers had now come to the conclusion that what had been thought to be the Mukondokwa was probably the Lungérengère, which was also known to pass Simbamweni, on the main road to Mpwapwa, they were still of opinion that this would probably be found to be the main river; and it was this that made me hopeful of finding the Kingani of practical value if it proved navigable, having no idea then of its extremely serpentine course.

It now only remains to give an account of the Kingani and Lungérengère rivers as far as explored, and a summary of information, derived directly from the natives, respecting that portion unvisited; and as the accompanying sketch-map is a faithful representation of what was seen, little more than a brief description of it need be added.

Unless the wind be high, there is no difficulty in dhows or large steam-launches entering the Kingani at three-quarters high water by the channel indicated in the map, the entrance to which is about 3½ miles N.W. of the landing-place below the French Mission, one long reefy point marked by stunted mangrove-bushes, about 2 miles N. of the anchorage, having first to be rounded. If there is much wind, an hour before the top of the tide should be chosen, and even then only good sea-boats should attempt the passage; and the channel being narrow, a pilot should be employed under such circumstances.

After entering, the first reach of the river is very broad and shallow, but the channel is fairly indicated by the colour of the water. After this the average depth is 18 feet for the first 20 miles, and there is a sensible rise and fall for 10 miles further, the depth averaging 12 feet at low water. The breadth soon diminishes to 250 yards, and it averages about 200 yards up to the first ferry (Kivukò), and 150 yards up to Kingwere ferry. The banks are generally low and interspersed with mangrove swamp, and the adjacent country is one vast plain more or less inundated. At low water a steep slant of black slimy mud, in which one sinks beyond the knees, testifies to the nature of the soil, and large deposits of decayed mangrove-roots emit a fœtid odour only too suggestive of the virulent fever of the Kingani. At its fourth reach the river intersects the Windi road, and here on the right bank is the village of Kingani, the remains of what was once a trading station under an independent chief. In the times when the constant raids of the Washenzi kept the inhabitants of Windi, Saadani, &c., in perpetual alarm, the river protected them from these assaults, hence the old Swahili word, "Kinga" (a shield), was applied, to which the natives here universally ascribed the name: but whether this part of the river was called after the old town, or the town took its name from the river, could not be ascertained —in fact none had the faintest idea. It is only in this district and sometimes at Bagamoyo that the river is so called; its general name as high as the junction of the Lungérengère is "Rufu," or "Lufu," though in some of the Uzaramo districts it is pronounced "Rufúu." It was impossible to get from the people the derivation of this name. It may be mentioned that the Mfúu is the one tree everywhere present on its immediate banks. I am, however, inclined to think that "fúu" is merely a dialectic form of the Swahili adjective "ku," or "kúu," great or chief (e.g. *njia kúu, the chief or main* road).

Ascending to the first ferry, a few dhows are passed loading red mangrove-poles (Zanzibar rafters), or white mangrove-logs for burning lime. At the ferry, probably one or more caravans will be seen crossing, those outward-bound carrying principally cottons, beads, and wire, each sort being made up into burdens of a special form, those coming from the interior bringing chiefly ivory. This is the shorter path to Bagamoyo, but Kingwere ferry, 2½ miles higher up, is narrower, and is equally patronised by caravans.

About two miles beyond this the ferry of Msituwambiji is reached. This is the route of the small Ukami caravans which, for the sake of avoiding as many of the Uk'were villages as possible, take the muddy road through the valley of the Vitomondo, passing through the marshy ground bordering the small lake of Chanungo, which swarms with leeches, instead of the high and comparatively dry route *viâ* Kikoka, Rosako, &c. They march at a long swinging pace, and generally accomplish the distance between Bagamoyo and Msuwa—about 40 miles—in two days. They bring principally salt. Here the hippopotamus, which has been seen in most of the reaches, seems to have made its special haunt, and unless careful to keep near the bank or in shallow water, a small boat is very likely to be upset by some furious rogue bull or frightened cow, and a steam-launch to get a severe shock and possibly have a plank staved in or bitten through by one of these animals. Here the river is 70 yards broad and about 12 feet deep, but it begins to become obstructed by snags and sunken trees, which leave only very narrow passages through which the water rushes like a sluice. Still more dangerous are these obstructions if they are altogether below water, and not near enough the surface to show any indication of their presence. On one such we struck at Cha-Nungo, and though the tide rose nearly a foot, we had become so fixed that it was a day and a half before we were able to proceed, as we had to remove everything from the launch, and to make water-tight a plank in the engine compartment which had been split by the concussion. This delay afforded an opportunity for giving the men a little target practice; but if a report of the scores made at 50 yards had been sent up the country, it would almost have invited attack, there being only one hit made during the day, and that a bull's-eye by the steward, who had never fired a gun before. The remainder of the time was occupied in endeavouring to ascertain the course of the Vitomondo stream; the only path, however, was a hippopotamus track through tall spear grass, crossing every few hundred yards a marshy bottom, swarming with leeches. Eventually the lake was reached, but little of it could be seen, and every effort to reach the low hills, which evidently form the valley of this stream, was frustrated by impassable marshes. My guide having long since declined to proceed, the attempt was abandoned, and a tall tree, on a little knoll, proved the only available point from which a rough sketch of the adjacent country and a few compass bearings could be obtained. The next reach beyond Cha-Nungo may be considered the ordinary tidal limit; the highest springs reach Dunda, however.

Two miles above Cha-Nungo is the hamlet of Fundi Hamisi. Here the river narrows to 60 yards. Up to this the people on both banks are Swahili, or slaves cultivating rice for their masters at Bagamoyo. The first sign that we had entered Uzaramo was the appearance on the banks of small groups of women and children, attended by a few more than half-naked savages, each carrying a bow and two poisoned arrows in hand, with a leather quiver of the same at the back. These warriors generally knelt in the tall grass or behind a bush, until the women reported there was no danger. They have the head hideously thatched with a mixture of black clay and oil, with beads or drops of the same at the ends of the rat-tail shaped points of hair which fringe it; their legs and arms are encircled with heavy brass and copper rings, a few ornaments of beads or white shells adorning their ears and necks.

Both bows and arrows are most workmanlike in make and finish; the poison extends for about 4 inches below the barb; when fresh it is of a bright red colour. They told me it is prepared from the giant euphorbia, and that their medicine-men provide them with an efficient antidote; but I failed to learn the nature or procure a specimen of this compound. Many of the children are got up in the same manner as the men, carrying, however, miniature bows and arrows; the latter tipped with hard wood points, and the shaft stained red where the poison should be. They have no idea of practising their weapons on birds and small animals, as the Wanyika children do.

But this warlike appearance seems only a keeping-up of the customs of a generation now rapidly passing away. On closer acquaintance, these fierce-looking persons were found to be generally of a timid disposition, and by no means prone to an indiscriminate use of their weapons. Whenever a herd of hippopotami in the channel rendered it necessary to sound the steam-whistle, or the donkey-engine was turned on, they instantly fled for the nearest cover, or carefully got the women and children between themselves and the supposed danger; and they rarely showed again, unless the boat stayed a time for wood or provisions, when they were the last to draw near. The women and children were, as a rule, much less timid; they are mostly fairer than the Swahili, and they have few traces of the negro type. They wear less clothing and fewer ornaments than the men.

A little higher up, the character of the people changes so far, that, being all busily engaged in profitable agriculture, few find time to get themselves up in war paint. Instead of being afraid of the white man, they think only of how much they can make out of him; but the inordinate love for a hard bargain, natural in the Wazaramo, causes them to be so overreaching, that we found it generally impossible to conclude a purchase unless we were prepared to pay two or three times the proper price. If we had relied upon the country for our provisions, as a caravan must do, delays would have constantly occurred, and the chiefs would have virtually collected hongo, by ordering their people to add it on to the price of provisions. In these agricultural districts the people more generally wear a ridge of muddy hair down the centre of their heads, as being less trouble to manage than the thatch. Some of the men who have made trips to the coast to dispose of their grain, have, however, turned Mohammedans; and there is little doubt that this religion will soon spread through the country.

The undulating swellings, rather than hills, glimpses of which had lately appeared to us, here approach the right bank. They generally run from 40 to 60 feet high only, but now and then may attain 150 feet; and are more or less in the nature of spurs, from the main line of rising ground running generally a few miles back, and following more nearly the direction of the river than this rolling ground. The latter, however, is rarely sufficiently defined to form ravines; and, moreover, such depressions as exist are seldom at right angles to the river. It was, impossible, therefore, from the boat, to sketch them with any approach to accuracy, or give anything more than what was actually visible from the river. The course of the wavy depressions, however, undoubtedly trends towards the river; but their absence of character is shown by the fact that they do not contribute a single feeder, or even a waterway, that would become so during the rains. The consequence is, that this region continues damp and unhealthy long after the rains have ceased.

The general course of the rising ground over which the Kutu road principally runs, and that flanking the valley or depression on the left bank, was sketched from two low hills which were ascended during delays for cutting fuel, the only stoppages that could be afforded. The latter are much more deserving of the name of hills; they gradually recede towards Msuwa, leaving the valley on that bank an average breadth of 7 miles. The nature of the country appears similar to that already described on the right bank, only more marked, owing to the greater height of the hills, which are generally also densely wooded. On most parts of this rising ground the copal-tree is found; and wherever the soil is red and sandy, deposits of fossil copal may be expected. We saw some fine trees near Dunda, and underneath, numerous pits, from which the fossil gum had been dug. The tree was also seen at our other landing-place on the right bank, a hill abutting on the river not far from Paraya Tembo; but here there were no diggings.

At Kawamba, about 20 miles above Dunda, the breadth of the Kingani has decreased to 40 yards; and here the current is 2½ miles an hour. After this the Kisabi district is entered. This is a wonderfully fertile country; the river winds and bends in an extraordinary manner, irrigating the land, which is always very low on one side, sometimes on both, for many miles; and the soil being suitable, an almost unlimited supply of the finest rice might here be grown. There is, indeed, much pains taken in the cultivation of this district; and the quality of the grain, some of which I had cleaned, is very superior. On the drier slopes, Indian corn, millet, and tobacco, are largely grown; and a considerable trade is carried on with the coast, but nothing compared with what would be the case if there were any other means of conveyance than porterage by the people themselves. There is not, however, an ox or even donkey in the country; and canoes are only used for ferrying purposes. The Mzaramo seems never to take kindly to the water; probably the swarms of crocodile and hippopotami, and the long flood season, may have much to do with this.

The people of this and other low districts are compelled to retire to the hills for the rainy season; there they store their grain, &c., for consumption and next season's sowing; and the men, who are very clever at making fish-traps of various descriptions, cover the adjacent low country with weirs, stake-traps, and long lanes of reed fences leading up to them. At this time the river is always more or less in flood, but after each special rise and inundation, large quantities of fish are taken in this way. The Kingani abounds with fish of many descriptions, some being quite equal in flavour to the average sea-fish of this coast; and one, the mzozo, of a firmness and fine flavour not surpassed by any fish found in the tropics.

The mzozo in general appearance exactly resembles a river carp, but on examination is found to possess a single row of very fine sharp teeth. There is also a roughness of the skin below the gills, not found in vegetable-feeding fish. They would doubtless take a fly, for in the course of an hour, whilst passing a very narrow part of the river, three of them, each weighing between 3 lbs. and 4 lbs., jumped into the launch.

Beyond Kisabi, the low banks for about 7 miles on either side are completely covered with a wild cucumber, the leaves and blossom of which are similar in appearance to the ordinary European variety; but the fruit is smooth, about a foot in length and 1½ inch diameter. My specimens were all lost in an accident to the boat, so I can only say, with reference to this plant, that the natives do not use the fruit as food.

Soon after this the hills of Muhonyera district again approach the river on the right bank, and here a succession of narrow stretches of water, called by the Wazaramo "kipanga," traces of which had before been observed, commenced first on the left bank, then on the right. Their connection with a former bed of the river is evident; and whilst some bear traces of recent formation, others again are hemmed in with a network of shrubs and tangled creepers of several years' growth. I traced one of these kipanga, and found it to form a regular chain of ponds of about 4 miles; and the natives assured me this was, some six years ago, the bed of the river. In another place there were two long deep cuttings, which were only divided from the river by a bank of sand about 10 feet thick, but bound together by a few large uprooted trees, which had been brought down by a late flood. Evidently these had been parts of the river's course before the last rains.

In other districts the process of formation of new channels was clearly evidenced, and in many places it was apparent that the next flood would more or less alter the course of the stream. The natives declared that these kipanga were to be found several miles distant from the present banks; and though unable to verify this assertion, it was impossible to doubt, from what was actually seen, that where the adjacent country is flat and the soil loose and sandy, most rainy seasons effect important changes in the bed of this river.

A few miles further, the spurs from the Msuwa hills approach the left bank, and beyond this the extensive district of Dundanguru is entered. On the left bank the undulating country, interspersed with ebony and hard-wood trees, mingled with mimosa and various thorns, which has aptly been described by Burton, Speke, and others, as *park-land,* here commences. On the right bank, after passing several groves of the Dom palm (Mvuno), the picturesque village of Mafizi is reached; and having had to stay here for two days, considerable information was obtained by mixing with the natives, who proved very friendly and intelligent.

Mafizi is a collection of small hamlets situated on the banks of the Kingani and Mto Mafizi, about 30 feet above the river. The Mafizi is a mere brook, except during the rains. It rises in the Dundanguru hills, a few miles north of Sagesera, and is one of numerous similar watercourses which now, from both sides of the valley, begin to find their way into the Kingani. Sahale, the chief of Dundanguru, came down to see us; his young daughter carrying his gun across her shoulders, and holding it at both ends behind her neck. He assured me this was the only firearm in the district, which is very extensive, extending from Sagesera, which place has never been reoccupied since the Maviti destroyed it and killed the chief, to Muhonyera, and for the same distance on the left bank. He stated, however, that the Wazaramo chiefs had ceased to hold any real authority, except over their own villages; and that only in event of war could they now give any order to the elders of other places within their districts. He confirmed what everyone had acknowledged respecting the total loss of power and influence by the Wazaramo as a nation since the last Maviti invasion, and showed me the sites of numerous villages which had been totally destroyed, with their inhabitants, on that occasion on the left bank. His own people having received warning before these savages reached them, fled, together with the people of Mafizi, to the jungle, and returned to rebuild their villages when the invaders retired. The people of Mafizi have no occasion to remove during the rains; their huts are remarkably clean and well constructed, and the place is very healthy. This is the last of the fine grain districts, and large flocks of sheep and goats are kept; in fact, the people are altogether a well-to-do and well-regulated community.

A few miles further up, Sagesera district is reached. It is now a wilderness, and a most unhealthy region, the Mkosi stream which runs through it being extremely marshy and choked up with rank vegetation. The site of Sagesera village is now jungle, but the Konduchi road is still open and meets the Kutu road a few miles south; but the village of Makutaniro has been removed to the other side of the river, the numerous cross roads which made this a convenient caravan stage having fallen into disuse, and being completely overgrown, while new roads have been opened and all meet at the new Makutaniro, as will appear hereafter.

A few steep low hills with dark ravines between being passed in the district of Dirunga, a few small feeders enter the Kingani, of which the Kimalamsale on the left and Kipora on the right bank are the principal.

Here the game country approaches the river on both sides.

On the left bank the gnu, waterbuck, and buffalo in the lowlands, and the rhinoceros on the stony hills at the back, are plentiful; while on the right bank is the district of Kipora, described by Burton and Speke, and shot over by Grant.

The Lungérengère is now reached; the mouth being well wooded is hardly visible, and we were surprised to find on approaching that this somewhat celebrated river was a mere stream, evidently rapidly drying up. The mouth is divided by a grassy mound, which may any day be swept away; one entrance being ten feet across, and the other about double that width. It was, however, impossible even for a canoe to ascend; in fact, a few hundred yards up, the stream is banked up by sand into separate runnels, interspersed with little pools artificially constructed for catching fish.

There are several villages near the mouth of this affluent. The principal one is named Ngérengère, and has a regular boma or stockade, with a high, arched gateway.

We spent two days here, and Mr. Mackay took the greatest pains in obtaining observations. These observations have been sent by him to the Church Missionary Society of London. He, however, worked them out himself, and gave me the result, as below;* and I have no doubt this is fairly accurate, although the observations were taken under great difficulty, owing to an accident to his pocket sextant, the only instrument we had.

I was only able to spend one day on the Lungérengère. I found it averaged 20 feet in breadth and two feet in depth. Its course through a narrow cutting in the park-land above described, averaging about 25 feet below it, is not so tortuous as the Kingani. I found it everywhere fordable, but in most places the trees on either bank met over-head, and natural bridges were constantly formed by vines and creepers. These were generally the means adopted by the natives for crossing the stream, as the crocodiles render the fords dangerous.

In crossing the fine undulating plain from Legeza to Mwere I came upon waterbuck, brindled gnu, and an antelope I had never seen before, also wart-hog, and passed four large herds of giraffe. Although not able to devote sufficient time to enjoy shooting, I could not resist the temptation of stalking the last herd and shot the leader, who gave a few bounds, ran two hundred yards, and fell dead. Having got some of the natives up from the village of Mwere, I cut off his head, tail and feet, and returned to the boat, but had to regret my having been carried away by love of sport, for during the remainder of our journey we not only had to put up with the smell of very high giraffe meat, but also with the laziness of the men who were always gorged with flesh, which they ate half raw and half burnt, being unable to cook it properly on board the launch.

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* Mouth of the Lungérengère at junction with Kingani, 7° 0′ 39″ S., 38° 28′ E.

The next day we ascended the Kingani for a few miles, but found the difficulties too great to warrant our spending any more valuable time over the exploration. The river in no way altered in its general appearance, being from 25 to 40 yards wide, and about 8 feet deep in the channel; but the obstructions in the deep water became more numerous, and the breadth of the channel sensibly contracting, we decided on returning.

Above the junction of the Lungérengère the Kingani is called the Mpezi; and as the natives persist in declaring it to be a separate river, and cannot be made to understand any civilised notions on the subject, it is apparent that nothing but what a traveller actually sees can be adopted as fact, and it is for this reason that in concluding this Paper I shall be very brief on the subject of the upper portion of the river not visited.

About three miles beyond the junction of the Lungérengère is a large village called Sungura, on a stream—the Visungura—which runs into the Kingani. Near this I got a good view of the country from a low hill, and satisfied myself that there is no other mouth to the Lungérengère.

From this point, Kidunda was seen about 15 miles due S.W., and Ndege la Mhora about 10 miles S.W. by S. On the opposite bank was the district of Tunda, through which a path leads to Ndege la Mhora and the ford over the Mgeta.

The new village of Makutaniro is at the cross roads near Sungura. From this is a road to Simbamweni, and the direct road to Mpwapwa, through Kidunda. Many other roads also meet here, but as the districts from which they lead are unknown at present, I shall merely refer to the accompanying map for a general idea of this place, which was the furthest point reached.

As regards the Lungérengère, though a deep and rapid torrent during the rains, it is practically useless, being unnavigable at all times, even by canoes; and its only interest lies in the great extent of its course and the effects of its violent floods. It dries up in September.

The natives of the last few villages through which we passed are of very mixed nationalities. Every one contained people of Ukami, Usagara, and Ukutu, besides of Uzaramo; and they speak a dialect very different to Kizaramo, and containing many Kisagara words. But I found Kiswahili was spoken fluently by several men in each village, and we therefore experienced no difficulty in respect to language.

The river above Kidunda was described by several natives who were perfectly acquainted with it, and there was no substantial variation in their descriptions.

After passing Kidunda, the river passes through a more hilly country, and the hills appear to be composed of a hard and dark-coloured rock, with which the channel becomes choked and divided into numerous rapids. It was considered just possible that with good luck we might reach the Mgeta in June or July, but I am inclined to doubt this, as the people admitted many canoes were lost in attempting the passage through these boulders. I saw some of this stone, which is very hard, and is used for sharpening their arrow-tips and hoes by the natives.

The Wakutu, who inhabit the districts between Kidunda and the source, which is said to be in the Usagara hills, not far from Zungomero, were more reduced by the last Maviti incursion even than their neighbours; in fact the country is said to be nearly depopulated. The Mgeta, though a larger stream than the Lungérengère, is equally unnavigable.

The climate of Ukutu is described as extremely deadly. Even the natives are subject to malarious fevers throughout the year.

Much interesting information respecting the adjacent country was noted; but being of no practical value, it is omitted from this Paper.

Our descent of the river was full of difficulty, the stream constantly taking the boat out of all control; but luckily we only experienced one bad accident, when the branch of a sunken tree went through the bottom of the engine compartment, whilst we were being shot through a narrow rapid. We had, in consequence, to run her ashore, and were delayed for two days, losing and spoiling much property.

In conclusion I can only express my belief that the Kingani, as a navigable river, is practically useless.

With rice in such demand as it is in the island of Zanzibar, the Kisabi country would provide remunerative work for more than one steam-launch; and if the natives could be prevailed on to cultivate for the express purpose of export, a large grain trade would soon spring up: but as a highway to the interior, it cannot, I think, ever compete with the Wami.

I am convinced that the only healthy route to Unyanyembe is by the Saadani road; and as the country is now found by the Rev. Roger Price to be practicable for waggons as far as Mpwapwa, I believe it will prove the most economical route, and the one that will doubtless eventually be adopted. Saadani, however, will never do as a commercial port, but it is by no means certain that there is no fairly convenient anchorage within a reasonable distance of that town. If not, the mouth of the Wami could readily be improved, and I believe that the river could be made fairly navigable for at least 40 miles.

If the movement that has commenced in Europe for opening up the interior of Africa bears fruit of a practical kind, I would strongly recommend the route I refer to through Useguha being thoroughly tried as the road to Unyanyembe and Ujiji; for though I have always been of opinion that Mombasa will eventually be the coast depôt, or port for those districts, the time is still distant for opening the route from that station, owing to the nature of the tribes living thereon.

As regards the Nyassa country, Dr. Kirk, whose opinion on these subjects is entitled to more weight, perhaps, than any African traveller now alive, has always considered that the Zambesi and Shire is the natural highway to it; but to introduce his conclusive reasoning on this subject would be here irrelevant, and I merely refer to it as my reason for remaining silent respecting various paths which the Wazaramo assured me were short cuts to the north of the Nyassa Lake, but of which the utility will not probably be tested till the other routes referred to have long been regular highways. The Lufiji is now the only river in the extensive dominions of Zanzibar, south of the equator, remaining unexplored. It is probably, with the exception of the Zambesi, and perhaps the Juba, the largest on the east coast of Africa, and it is to be hoped we shall not long remain ignorant as to its extent and utility.

XIII.—*Geography and Resources of Newfoundland.*

By ALEXANDER MURRAY.

IT is not a little remarkable that the oldest colony of Great Britain, and the nearest to her, should be the last, or nearly the last, of which anything beyond the mere sea-coast (and that but indifferently) is known. Until within the last few years, the whole of the vast interior of this great island was as much a "terra incognita" to the exterior world and even to the residents (who occupy the coast only) themselves, as it was in the days of Sebastian Cabot or Jacques Cartier; and it is difficult even now to persuade many people, even amongst those who have lived in the country all their lives, that it is anything more or better than a vast fishing-rock, enveloped in everlasting fog, placed in an Arctic position in the Atlantic Ocean. Many circumstances have combined to produce the most unfavourable impressions as to the climate, soil, and capabilities of Newfoundland; and representations have been so contrived as to foster ignorance and prejudice, and to retard civilisation and progress. Thus the prevailing opinion has been formed that the natural resources of the island are absolutely *nil*, while the produce of the sea alone, with a strand to land it on, is all that nature intended as an inheritance for the unfortunate island and its possessors. The principal, or rather, indeed, only object in view in presenting this Paper, is to show that many of the objections urged to the colonisation of Newfoundland are utterly untrue, and that the fact in many respects is, that its natural resources are of a very high order, and may, with properly applied capital and skilled labour, be developed into great and important industries.

The geographical position of Newfoundland is (or ought to be) well known, and its general outline of coast, with its triangular form, its numerous promontories and deeply-cut indentations, have long been represented on maps and charts of various dates; but the coast-surveys until within the last few years were very inaccurate in the detail at nearly all parts; and there has been no British Admiralty Survey of the western and northern coast for upwards of one hundred years. The last survey here referred to was made in 1772 by the celebrated Captain James Cook; and the work generally, considering the time and appliances at the great navigator's disposal, are beyond all praise, in accuracy being a marked and favourable contrast with some surveys of much later date. Since about the year 1862, several revised surveys have been made under Captains Orlebar and Kerr, Lieutenants Robinson and Maxwell, and other officers of the Royal Navy, which have greatly added to a correct knowledge of the coast outline, the innumerable islands, and the character and soundings of the sea-bottom; but unfortunately, these surveys have recently, except at a few places where the discrepancies were most glaringly objectionable, been discontinued in favour of Labrador. We have now, however, the satisfaction of having an accurate coast chart for our guidance from the head of Placentia Bay round Cape St. Mary, Cape Race, and along the eastern coast as far as the Twillingate (or Toulinguet) Islands, at the southern entrance of Notre Dame Bay, together with the Islands of St. Pierre and Miquelon, and detached portions of the southern shores; but in the meantime the whole of the remainder very much requires supervision.

The Interior.—Previous to the year 1864 it is perfectly safe to say that no survey, or anything approaching a survey, properly so called, had ever been accomplished, or even attempted, anywhere inside of the coast line. In the early part of that year, the late Sir William E. Logan, then Director of the Geological Survey of Canada, was appointed by the Local Government of Newfoundland to initiate a geological investigation of the island. At that time, I being the first assistant on the Canadian staff, was offered the appointment, and accepted it; left Canada, and immediately made arrangements with the Government to carry on the inquiry as vigorously as possible, and began operations in May of that year. Since that time till the present day I have been incessantly busily engaged in this work; have visited, more or less, every part of the country, from centre to circumference, and have carefully recorded all my experiences from day to day, which finally were condensed annually in the form of a Report of Progress, addressed to the Governor of the Colony. Although my duties were supposed to be purely geological, and particularly in reference to the prospects of the presence or otherwise of metallic ores or other economic mineral substances, a very large proportion of my time was necessarily occupied in topographical surveying, the result of which is the map which accompanies this, it being from an original scale of 2½ miles to one inch, reduced to a scale of 25 statute miles to one inch.* Any one at all acquainted with geological investigation, and with the absolute necessity of a correct map upon which to delineate the boundaries of formations, and otherwise to represent the structural details, will at once perceive that topographical work, in a case like mine, where no one simple feature was correctly represented, and many most important ones not represented at all, was of paramount importance to arriving at even an approximate conclusion in regard to geological facts. Hand-maps and other maps certainly had been previously published, showing certain imaginary mountains, lakes, streams, rivers, &c., but no measurement or triangulation had been attempted; and the result was, as might be expected, a most perfect caricature of the reality, where no one single feature was drawn in its right place, or in the remotest degree resembled the object it was intended to represent. The plan I adopted for carrying on these surveys was on the same principle as that usually practised by the officers of the Government Survey of Canada, namely, to scale the principal watercourses by means of prismatic compass and Rochon's micrometer telescope, keeping up a connected system of triangulation from all the most conspicuous heights, and by taking repeated astronomical observations for latitude and magnetic variation. By these means the whole of the great features of the island have been laid down, and in some parts, especially on the western side of the island, a considerable amount of coast and minor detail. These surveys, moreover, have been connected at several parts to the more accurate and recent work of the Admiralty surveyors, and last year they were further checked by a regular and systematic survey for a railroad, by transit and level from St. John's Harbour to St. George's Bay. The result has proved highly satisfactory, as demonstrating the accuracy of the topographical work of the Geological Survey, which was accomplished under many difficulties.

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* The engraved map accompanying the Paper is still further reduced to a scale of about 39 miles to an inch.—Ed.

My experiences in the interior of the country, while carrying on the geological investigation, enable me to speak with a considerable degree of confidence as to its merits and demerits, and encourage me to assert that the opinions generally entertained are in many respects erroneous, and in all must be more or less modified. To make my statements as explicit as possible, I shall attempt to give a faithful account of the subject by arranging it under the following heads: viz., General Geographical Character; Climate; Timber and Mineral Lands.

General Geographical Character—Mountains.—The coast at all parts of the island seaward is essentially what is usually termed *iron-bound*, rising frequently in bold, lofty precipices, vertically, or nearly so, from the sea. The general character of the outer interior may be justly termed mountainous, although in no case do the mountains attain a very remarkable altitude; but the inner interior may be more properly described as a vast elevated and undulating plateau, with ranges of minor hills alternating with shallow valleys. The general trend of all the great physical features is about N.N.E. and S.S.W., the principal range of mountains, commonly called "The Long Range," running near the western side of the island for nearly its entire length. The Cape Anguille range and the Blo-mi-dons—the latter of which (on the south side of Humber Sound) rise to an altitude in some instances considerably over 2000 feet—run outside and nearer to the western coast than the Long Range proper, and parallel to it; but being of quite a distinct geological age, and altogether different in feature and character, are to be considered as independent and separate features. The land rises in mountain masses from the southern coast between Cape Ray and Bay D'Espoir* at nearly all parts; but a very decided range of extremely rugged and desolate hills, reaching at many parts an elevation of upwards of 2500 feet, may be traced diagonally across the island, running nearly parallel with the Long Range towards the Grand Pond and Hall's Bay. Towards the eastern side of the island, other well-defined ranges of hills, such as the Black River and North Harloc ranges, which run in the same parallel direction between the heads of Placentia Bay and Clode Sound, in Bonavista Bay; the Sawyers Hills in the St. Mary's Peninsula, and the Chissel Hills of Eastern Avalon, all maintaining the same general course. Besides the great hill ranges, a set of remarkable isolated and sharply-peaked summits, locally known as tolts, are distributed over the interior, which, rising abruptly at intervals out of the great central plateau, serve admirably as landmarks to guide the Indian or sportsman on his line of march.

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* Corrupted into "Despair" on the charts.—ED.

Rivers.—Much of the prevailing ignorance of the real character of the country is, beyond all doubt, attributable to the fact that it has been generally taken for granted to be destitute of great rivers; a notable example of which may be recorded as being the expressed opinion of no less a personage than the late Sir Thomas Cochrane, a most justly highly respected and progressive governor of the province, who, having visited all the outports, and circumnavigated the island, came to the conclusion that it possessed in no case any stream of water that could be appropriately dignified as a *river*, or that was entitled to any higher designation than a *mere brook!* Let us see now what the facts are, as determined by actual survey. The most important of the rivers are the Exploits, the Humber, and the Gander, while there are many more, such as the Indian Brook and others of Hall's Bay, the Gambo and Terra Nova in Bonavista Bay, &c., the drainage of which fully entitle them to class in the category.

The Exploits.—The Exploits River rises in the extreme south-western angle of the island, and within twelve miles of the southern coast, near La Poile, and flowing in a north-easterly direction, terminates in the Bay of Exploits, Notre Dame Bay; the distances from the sources to the outlet measuring very nearly *two hundred miles* in an air-line. The upper waters flow in two minor branches, the Exploits proper and the Victoria branch, of about equal size, both of which empty into Red Indian Lake, which itself is upwards of 36 miles long, with an average width of about two miles, and very deep; whence flows the main stream for 72 miles to the sea. The normal surface of Red Indian Lake is 468 feet above the sea, and its total area is 69 square miles. There are numerous tributaries to this great river, some of which might with justice be termed rivers themselves, and the whole area drained by the Exploit Valley is nothing under *three thousand square miles.*

The Humber.—The Humber also rises in two branches; one branch, which is usually known by the Indians as the main branch, taking its origin about 20 miles inland from Bonne Bay on the western coast, flowing first north-easterly till within ten miles of the head of White Bay on the north-eastern coast, where it bends round and runs south-westerly to Deer Pond. The other branch heads with the India Brook of Hall's Bay, and flowing south-westerly, and generally parallel with the other great features, expands into a succession of small lakes, and finally into Sandy Pond and the Grand Pond. The inlet and outlet of the latter are within three miles of each other, and both at the extreme northern end of the lake, the stream flowing rapidly, and in a circuitous curve, westerly to its junction with the main branch about six miles above Deer Pond. Deer Pond is about 16 miles long, and has a surface area of 24 square miles. From Deer Pond, which is only about 10 feet above the high-tide level, the river flows majestically to the sea, at the head of the Humber arm, Bay of Islands. The lake expansions on this magnificent river are numerous, and many of them of vast area. The surface area of the Grand Pond is no less than 192 square miles, which includes an island of 56 square miles. The whole area drained by the waters of the Humber I have elsewhere estimated at something over 2000 square miles.

The Gander.—The third of the great rivers of Newfoundland is the Gander. This, like the other two, rises from two sources; one being within a short distance of the Bay d'Espoir, on the southern coast, and interlocking with the south-flowing waters, whence it flows north-easterly, keeping a tolerably straight course, to its outlet into the Great Gander Lake. The other branch interlocks with the Gambo and other streams of Bonavista Bay, meanders circuitously westward, and finally to the northward, falling into the Great Gander Lake at the (so-called by the trappers) south-west arm. The Great Gander Lake is of a serpentine form, is upwards of 36 miles long, averaging a width of two miles or upwards, and has a surface area of 44 square miles. The lower stream flows in an easterly direction for upwards of 31 miles into Freshwater Bay. The river is easily navigable for boats or canoes up to the lake, the surface elevation of which is 75 feet above the level of the sea. The depth of this lake was found by soundings to be at some parts nearly 100 fathoms. The area drained by the waters of the Gander is about 2500 square miles.

South-flowing Rivers.—There are numerous streams which discharge great volumes of water on the southern coast, whose courses rise at right angles to the course of the great main arteries, such as the Bay d'East River, Bay de North River, Little River, White Bear River, the La Poile, &c.; but these, rising at no great distance from the Exploits, and interlocking with its tributaries, are comparatively short in length, and, except when temporarily expanded at the broader parts into lakes or ponds, rush in turbulent torrents to the sea from source to outlet. Many of these streams make a fall of not less than 1200 feet within a distance of under twenty miles in an air-line.

St. George's Bay Rivers.—The rivers and brooks which discharge on the south side of St. George's Bay also interlock with the tributaries of the Exploits taking their origin amongst the mountains of the Long Range; after leaving which, they flow in a westerly course through a wide expanse of level country to the sea.

Character of Country.—The southern country, between the head-waters of the Exploits and the sea, is a dreary, desolate waste, almost entirely void of vegetation, and for many months throughout the year enveloped in the densest of fogs,—cold, gloomy, and unattractive as any land can very well be; and these parts of the coast being better known and more frequently visited by strangers than the more favoured localities, have given origin to the widely-spread misconception that the hideous characteristics of this special region apply without mitigation to the whole island. It is doubtless the case that over enormous tracts in the great central plateau, as also over a great area of the peninsula of Avalon, and on the great northern peninsula, marshes, and what are appropriately called burens, occupy the surface; but in nearly all cases the valleys of the rivers are well wooded, and most of them possess level and fertile tracts here and there where cultivation of the soil would certainly be remunerative, particularly as auxiliary to other industry. These great plains are dotted over by innumerable ponds and tarns, in many instances occupying fully one-half of a whole area of many square miles; indeed, it has been asserted, that were the whole island mapped out in detail, more than one-third of the whole surface would be represented by water. But it is in the valleys of the three great arteries of which I have already made special mention that agriculture is likely to become a great and important industry of itself, more particularly if those favoured regions are immediately opened up as timber limits to enterprising lumbermen, whose interest it would be to construct roads and encourage settlement. According to a rough estimate I made some time ago, there is an extent of fully 1000 square miles of available country in the combined valleys of the Gander and Gambo Rivers, and there is nearly as much more upon the Exploits, inclusive of the arms and bays at its mouth; while upon the western side of the island, the Humber Valleys, the country on both sides of St. George's Bay, and extensive tracts surrounding Port-a-Port Bay, present hundreds of square miles which bear favourable comparison with the best regions of the lower provinces of the Dominion.

Climate.—There is no subject connected with the geographical hsitory of Newfoundland more utterly misunderstood than the climate. Strangers approaching the island from the Great Banks, or sailing along its southern coast, have almost invariably to grope their way through a mass of dense fog, more especially during the summer months; and they, perhaps not unnaturally, assume that this gloomy characteristic applies equally to the whole country. Experience, however, teaches us that such is very far from being the case; and these same visitors who have only seen the south and south-eastern parts of the island, might be somewhat surprised when told that all the country on the north-west side of a line drawn diagonally across the land from Cape Ray to Cape Bonavista is usually as bright and with as transparent a sky as any part of Canada. The fogs engendered on the Great Banks, brought in by southerly or south-westerly winds, fill up all the bays and creeks on the southern shore; but after rounding Cape Ray, and running up the western coast towards Codroy, these watery vapours suddenly cease altogether, and may be seen as a dense dark cloud butting up against the mountain-sides, and stretching, like a great grey wall, away far out to sea to the westward. The great Bay of Placentia, with its numerous points, creeks, and coves, is a great receptacle for these fogs, which hang over it like a pall for days and sometimes for weeks together; while southerly and south-westerly winds carry the vapours before them across the narrow isthmus of the peninsula of Avalon, and fill up Trinity Bay in like manner. Conception Bay is comparatively clear, the fog being checked by the hills and greater breadth of that part of the peninsula; and even at St. John's the atmosphere is often clear, bright, and balmy, while some three miles out to sea one vast dark mass of fog stands up like distant land on the horizon. In Trinity Bay also, while all is enveloped in mist in the middle of the bay, the lo- - inlets are perfectly free from it, and the sun shines bright and cheerfully. Northward of Cape Bonavista fogs are of very rare occurrence, and throughout the great interior, north of the aforesaid line, they may be said, as a rule, to be absent altogether. In other respects the climate of Newfoundland is, as compared with the neighbouring continent, a moderately temperate one. The heat is far less intense, on an average, during the summer than in any part of Canada, and the extreme cold of winter is much less severe. The thermometer rarely indicates higher than 70° Fahr. in the former, or much below zero in the latter; although the cold is occasionally aggravated by storms and the humidity consequent upon an insular position. The climate is undoubtedly a very healthy one, and the general *physique* of the natives, who are a powerfully-built, robust, and hardy race, is a good example of its influence.

Forest Timber.—The best of the indigenous forest timber consists of white pine, white and black spruce, tamerook (larch), fir (called *var* in Newfoundland), yellow birch (called witelhazel), and white birch. These abound chiefly in the valleys of the great rivers already mentioned, and the valleys of their tributaries, but they prevail also, more or less, in all the minor valleys, and notably over the country surrounding St. George's Bay and Port-a-Port Bay. Large tracts of country in the Humber Valley yield groves of the finest description of white pine, which is also the case in the valley of the Exploits and sundry of its tributaries; and over a vast extent of the Gander and Gambo countries. In each of these regions a great timber trade might be established, which would assuredly be succeeded by settlement, for which a great extent of the land is admirably adapted. The spruces and larches are known to be of the best of quality for ship-building purposes, while the yellow birch is said to be equal in durability to English oak. This latter timber abounds chiefly on the western side of the island, and particularly about the St. George's Bay region, where it frequently attains a great size, both in girth and height.

Mineral Resources.—There is every probability that vast tracts on both sides and centre of the island contain metallic ores of great value and importance. The chief of these are copper, nickel, lead, and iron, which are usually more or less nearly associated with serpentine and other magnesian rocks of Lower Silurian age. The presence of the precious metals has been indicated by analysis at a few parts, and native silver is said to have been found in Fortune Bay. In the meantime the only mines in active operation are at Tilt Cove and Betts' Cove, both in Notre Dame Bay, and at La Manche, in Placentia Bay; but the developments recently made at the two former places have been so encouraging, that there can hardly be a doubt that the energy and enterprise displayed by the proprietors and directors of these locations will be imitated by many other capitalists, and the Bay of Notre Dame, particularly, will soon become a great mining centre.

Coal and other Mineral Substances.—Rocks of carboniferous age are spread over a vast extent of country in the St. George's Bay region, and in the valley of the Humber, near the Grand

Pond, and there appear to be a few worked seams of coal. These latter, although apparently occupying only a limited area, may probably be found, when fairly opened up, to be of very great local importance, as their position in each case is in the centre of a country well adapted for settlement, near to metallic minerals, and within a short distance of the terminus of the proposed railroad. The lower part of the same formation also contains enormous masses of gypsum, and the numerous saline springs and incrustations of salt upon the surface of the exposed rocks show the existence of that mineral, which in all probability might be utilised. Of ordinary economic materials the country contains abundance. Roofing-slates of admirable quality may be worked out in Trinity Bay. Marbles of various descriptions are known at Canada Bay, Bay of Islands, and several other localities; splendid granites occur at many parts of the great Laurentian country, while sandstones and limestones for building and other purposes abound, especially at the northern and western sides of the island.

Retrospect.—It may very reasonably be asked why, with all these natural resources, with a salubrious climate, and the great advantage of comparatively close proximity to the Mother Country, has this island been so utterly ignored, while labour and capital has steadily and constantly advanced past it, to fill up the wild regions of Canada, or to regenerate the unhealthy plains and great prairies of the Far West? The answer to this question is not far to seek, although to some interested individuals it may appear invidious. It has hitherto been the almost invariable custom, originating in ignorance, and persisted in through prejudice, to represent the country as unfitted for any occupation but *fishing,* as having no land worth tilling, and no timber worth cutting more than required for building fishermen's huts, and fishing-stages, or to yield an occasional spar for a boat or small vessel. It is not taken into account that the surface of the island is actually nearly a third larger than Ireland; that is to say, it contains an area, inclusive of its islands, of about 42,000 square miles. It is not considered that no surveys have been made till lately; and that the coast residents of intelligence have rarely, if ever, seen anything whatever of the great interior; nor is allowance made for the absence of accurate information from the want of roads, or any but the most primitive means of communication. People in England, or in any of the more civilised colonies, would scarcely be made to believe that not many years ago *settlement* for farming, or other purposes utilising the land, was *prohibited* by statute; and that to this day the practical effect of the present law is to *deter* any enterprise that is not directly connected with the fisheries;

that opening up lines of road through the country is mere folly; and that all the improvement required is a cow-path to lead from one fishing-station to another! Yet all this is literally and absolutely true, and there are those even now, in the face of all that has lately been proved on the evidence of the most credible witnesses of the facts, who pertinaciously maintain that the latter misrepresent the reality, and that nothing better than the well-worn old groove of the alternative of fishing or starving is worth consideration in Newfoundland. In round numbers, the total population of the island at this moment is about 150,000 souls, supported almost altogether in provisions by the Dominion or the United States; while I have no hesitation in asserting that, were it treated like any of the maritime provinces of the Dominion, where mining, lumbering, and agriculture are duly encouraged, the time need not be far distant when the numbers of the inhabitants might be reckoned by tens or hundreds of thousands, and eventually by millions.

The so-called French Shore.—The greatest hindrance of all to advancement or progress of any kind is the arrogant pretensions of the French, founded upon old and misconstrued treaties, who assume not only an *exclusive* right of fishing, instead of a *concurrent* right, over one-half of the whole coast, but actually to exercise *territorial jurisdiction* over the same; excluding the owners of the soil from the use of harbours where mining, lumbering, and agriculture might be pursued. Thus the finest regions of the island are left at the mercy of these foreign intruders; the country is infested by lawless marauders and smugglers; the magnificent timber is being recklessly cut down or burnt; the salmon and herring fisheries are fast being ruinously destroyed, and not one single penny-piece comes in the shape of revenue to the exchequer of the province.

But at length there appears to be a glimmer of hope that the Colony is destined to see better days, and that its worth and capabilities may shortly be more generally recognised and appreciated. Pressure from without has done something in this direction, and the successful result of the two copper-mines which have been established is likely to stimulate inquiry and attract the attention of enterprising adventurers and capitalists. Upwards of 1000 people are steadily employed all the year round at these two mines alone, and many more are likely to be so employed hereafter; other mines are likely soon to spring into existence, and the influence that must be brought to bear through the agency of this mining population will be irresistibly in favour of agricultural settlement, and the establishment of means of communication, where a ready market will be always at hand for surplus produce. It is beyond all doubt that the best descriptions of grass, green crops, and most of the cereals, thrive admirably upon the lands surrounding the minor bays, Notre Dame; and that beef, mutton, pork, butter and cheese could be raised as well as in any part of the British North American dominions.

Wild Animals, Fish, &c.—The indigenous game, beasts, and birds of the country are of the finest possible description, and in vast abundance; while the rivers and lakes abound in various species of fresh-water trout, and only require the due enforcement of the law preventing the outrageous and universal practice of barring the mouths of the rivers, to render them as prolific of salmon and sea-trout as any streams in the world. These attractions have, for several past years, induced travellers and sportsmen to visit the island; and few of those who have enjoyed a few weeks among those wild mountains and plains, have ever regretted the time spent there, or have failed to return to the scene of their adventures whenever opportunity offered. The principal beasts of the chase are the cariboo (a species of reindeer), the black boar, the Arctic hare, and the beaver. Wolves, foxes, martens, and weasels are sufficiently plentiful among beasts of prey. The game birds are three distinct species of grouse, of which the commonest is the willow-grouse (*Lagopus albus, Gmelin*), a bird quite equal in flavour, and affording sport little, if at all, inferior to the red grouse of the moors of Great Britain; wild geese, black duck, teal, snipe, custar, golden and other plovers.

That these few hurried and imperfect remarks may have the effect of in some degree counteracting the very erroneous impressions too generally entertained regarding a very important possession, I sincerely hope; and let me add, that I feel very sanguine, should mining adventure extend as auspiciously as it has begun, there is a great future for Newfoundland; that roads and telegraph lines will intersect the present wilderness; that the axe of the lumberer and the lowing of oxen will resound through the forests, and that smiling fields and cheerful villages will replace the desolation of bygone years.

XIV.—*Report of a Journey across the Island of Newfoundland, undertaken at the instance of his Excellency Sir J. H. Glover, from the south-west arm of Green Bay, viâ Gold Cove in White Bay, to the east arm of Bonne Bay.* By Staff-Commander GEORGE ROBINSON, R.N.

THE south-west arm of Green Bay is the north-western inlet of Notre Dame Bay, the northern side being a continuation of the coast-line trending west from Cape John. The arm is deep and narrow, running up 17 miles from the point of Green Bay, and 23 miles from Betts' Cove. The southern side of the arm is thickly wooded to the water's edge, whilst the northern rises abruptly, and extends to the westward as far as Sandy Pond in a range of hills rising from 700 to 800 feet in height, with bare, rounded summits, and but sparsely wooded for some distance down. As we rounded the sandy point at the head of the arm we observed a bear on the beach busily engaged feeding, but he retreated into the woods before we were within range. We travelled up the banks of a small brook that flows out of Sandy Pond for about three miles, passing patches of good, red soil, suitable for agricultural purposes, spruce, fir, and birch timber of fair size, and the land rising gradually to about 200 feet. Leaving the brook on our left, we proceeded in a westerly direction over marshes with stunted spruce and fir, the steep range of the south-west arm falling into the valley on our right; we noticed a few footings of deer, but no other signs of life. A granitic beach fringes the east end of Sandy Pond; the south-west arm ridge, here densely wooded, sloped gradually down to its shore. On the south side of the pond an extensive fire had destroyed for some miles the small wood that had grown on its granite soil; five very wild ducks being the only denizens of the lake. The west end of Sandy Pond is 8½ miles distant from the head of the south-west arm and small brook feeding it from the west. Crossing a marsh at the head of the pond, we put up a solitary snipe, passed through some good wood, all recently burnt, and, travelling in a north-westerly direction, rose over the ridge at a height of 500 feet above the sea. Alternate marshes, bald granite barrens, and belts of stunted spruce and fir characterize this country until we began to descend into the valley of Mic-Mac Brook, about four miles from the head of Sandy Pond.

A belt of red soil, suitable for agriculture, and about a mile broad, sloped down to the brook; it is covered with excellent timber, and some of large size, consisting of spruce, fir, birch, and a few pine. Mic-Mac Brook, 130 feet wide and from two to three feet deep, ran about north and south where we crossed it. We heard the sound of a considerable fall up the stream, and noticed that its banks were densely wooded for some distance down the valley.

Passing through a narrow fringe of green wood, perhaps 100 yards from the brook, our track lay up a steep ascent of 600 feet. The woods had been recently burnt over a large area, and nothing presented itself to the eye but burnt wind-falls, the branches pointed and blackened by the fire, and the bare granite rock under the upturned roots. We crossed three ridges of hills of the same character between Mic-Mac Brook and Mic-Mac Pond, a distance of about six miles, all entirely destroyed by an extensive fire;—a portion of our route that should be avoided on account of its high level and steep gradients, independent of its unsuitability for any purpose of a road, as it brought us out on the centre of the lake instead of the end, and over the highest round the margin of the pond. Mic-Mac Brook and Pond are known to the Indians by the name of Indian Brook and Pond, which we have altered to prevent confusion with the Indian Pond and Brook in the valley to the south-east.

Mic-Mac Pond is about five miles long and one broad, lying north-east and south-west, with the exception of the northern arm, which appeared shallow and full of boulders. We crossed the lake in two rafts, passing between the southern wooded islet and the islands joining the point of the northern arms. No sooner had we landed than we observed a stag swimming from the wooded islet we had passed towards a point to the south; we succeeded in killing him as he landed—a two-year old, in excellent condition. Leaving Mic-Mac Pond, we rose over a granite barren, with patches of wood, to a height of 350 feet above the sea, where we camped for the night. At dawn in the morning a doe and fawn visited our camp, coming within 30 yards of the tent; the fawn was shot, and his skin carried out as a remembrance of our journey. We gradually rose over barrier-ridges to a height of 500 feet above the sea, from which point we had an extensive view over the country of the Humber and the highlands of Bonne Bay; about a mile distant to the south we sighted a herd of 14 deer travelling about south. Our track now led us through numerous ponds, often concealed in dense patches of wood, which occupied considerable time, as we were obliged to make frequent détours to avoid them.

The White Bay barrens, rising 800 feet above the sea, are distant four miles from the coast-line of the bay; the summit we crossed was crowned with an enormous granite boulder, from which we had a good view of the surrounding country. The descent into White Bay is densely wooded, the trees improving as we approached the shore. We passed several ponds stocked with good trout; and, crossing three ravines running to the north, debouched on the sea-coast at the head of a steep wood-slide, with the little settlement lying below on the shingle beach at our feet, and H.M.S. *Eclipse* anchored in Gold Cove.

The valley at the head of White Bay is contracted by the steep wooded hills on either side to about 400 yards. The brook is full of excellent trout; and, although there was little water when we crossed, the *débris* on the banks, and the delta of shingle pushing out into the deep water of the bay, indicate a considerable volume in the spring.

Rising over the steep wooded shoulder of the western hills to a height of 600 feet, we passed a considerable quantity of good timber, birch, spruce, and fir. This continued for about two miles from the coast; and then an undulating country, intersected by marshes and ponds, tributaries to the Humber, stunted spruce and fir, and rocky summits of granite, led us some six miles in a westerly direction to Gill's Look-out.

From this ridge, which rises about 800 feet above the sea, there is a beautiful view of the valley of the Upper Humber; Adie's Pond in the distance, lying at the foot of Mount Ealos Range, the serpentine waters of the Humber flowing to the south-west on the left, a square bit of Birchy Pond below, with the yellow marsh beyond, and to the right Aldry Pond buried in the woods.

We descended towards Birchy Pond through a considerable quantity of burnt wood and about four miles of marsh. The pond is small, and on its southern side has a considerable sprinkling of the timber it takes its name from. Here we first found the red sandstone, an excellent substitute for a grindstone; killed some trout, and that excellent bird the bittern, whilst waiting for the Gill's flats to carry our provisions up the river. The Humber River flows through the western end of the pond, and then branches out into numerous channels and shallow lagoons, forming low alder-covered islands, previous to its plunging over a twelve-foot fall above a mile below the pond. A fringe of fir, birch, and spruce generally clothes the margin of these waters; but beyond, the marsh and stunted spruce invariably appear. Paddling across the river in Abraham Gill's flats and up one of the shallow lagoons, the principal portion of our party walked some four miles across a large marsh with a little burnt wood and scrub, until we arrived within a short distance of the river, where a belt of good timber was met with. Spruce, fir, birch and juniper clothed the south bank, and on the opposite shore a few pines reared their heads above the variegated foliage.

The river was deep and sluggish where we came out, but soon became rapid as it cut its path through the low cliffs of red pebbly conglomerate (horizontal), and forced a channel between the piles of dark granitic boulders, stratified sandstone full of nodules, and other rocks of water-worn character that choked the bed of the stream. A succession of rapids and steadies took us up to Rosetta Island, a pretty fork in the river; but from this point the stream fell in a continual rapid from Adie's Pond.

Adie's Pond is a considerable sheet of water lying at the foot of a mountain-range, stretching to the north-east of which Mount Eales is the most conspicuous; its general direction is west-south-west, from four to five miles in length, one and a-half to two miles in breadth; it is fed by a large stream that we crossed in the south-west corner of the lake, and by several large brooks on the northern side. To the southward and eastward of the pond the land is low and marshy, and we saw no good timber, but on the northern side we noticed a sprinkling of birch among the wooded slope of Mount Eales Range. The beach consisted of smooth water-worn boulders of granite rock, intersected by beaches of the red conglomerate and fine red sand. The south-west extremity of the lake is bounded by a broad sandy beach fringed with a grove of birch, in which Andrew Joe, the Indian, had pitched his wigwam and left his beaver-skins to dry. At the back of this grove a large marsh extended for some miles, gradually falling into the lower valley. From the brook at the south-west corner of the pond we proceeded in a westerly direction for a saddle in the hills. Passing through several marshes, and crossing three streams by the dams the beavers had made, a steep ascent of 500 feet took us to the summit of the ridge, from which we looked over the lower valley of the Humber, recognising the Lobster House, Hind's Hill, and the upper waters of Grand Pond.

Gradually rising over ridges of wooded country and crossing two large brooks, feeders of Adie's Pond, we climbed to the top of a granite plateau crowned with perched boulders; from this summit, in the early morning, the clouds lay over the valley like a white sea, with the dark hills in the distance rising out in striking contrast. Passing to the right of Joe's Look-out, a conspicuous hill with a pile of stones, built by Andrew Joe's father some years previous, we found ourselves involved in a difficult country; bare, rocky barrens, divided by valleys filled with timber and chains of lakes, lay across our track. We were discussing our midday meal by one of these ponds, when Andrew Joe and his faithful four-footed companion, Wa-beaton, suddenly appeared on the scene to our great pleasure, as he was well acquainted with the country. Under his guidance we proceeded to the westward and southward, picking our way between chains of lakes, across narrow granite necks dividing waters, in one case differing 100 feet in level, and rising to our highest elevation, 1700 feet above the sea. From this summit our view embraced a large extent of country: to the north-west the Erskine Mountain Range dipped into Bonne Bay; to the south-west the south head of the Bay of Islands; to the south the eastern end of Deer Pond and Grand Pond; and to the south-east the Lobster House and the distant hills over the Exploits. We now gradually descended through a more wooded country, passing numerous lakes, exhibiting a thinly-laminated, friable slate, highly metamorphosed and much contorted. Footings of deer became common, and in some places a beaten path, but we noticed no well-worn track trampled by the feet of herds, as seen in the southern parts of this island. Crossing the country as we did, signs of large migrating herds as reported travelling to the southern peninsula in the summer, and returning in the fall, could not have escaped our notice. Andrew Joe was of this opinion,—that one wolf destroyed more deer in a season than all the sportsmen. We came on the skulls of two fawns killed by wolves; one lay in a small marsh at the head of a pond, the grass trampled all round it. No sooner had our party passed into the woods out of sight than the hungry pack broke out into a chorus of howls. It might well be considered if the present bounty of 10 dollars is a sufficient inducement to destroy them.

We now traversed the valley bounded on the north by the precipitous range of Mount Erskine. Crossing a large marsh, we descended into a densely-wooded country skirting the edge of Whiteway's Pond, and glad at some parts of our journey to wade in the water in preference to the dense thicket of wood along the edge of the lake. Cliffs of quartz overhung the pond, but the beaches were granitic. A considerable brook flows out of Whiteway's Pond, falling, as Andrew Joe told us, into Bonne Bay. We noticed a piece of serpentine in a small stream after we had crossed the brook, but the rock *in situ* was slate. Passing by the side of a small pond, and struggling over a hill of windfalls, we arrived at the head of Wigmour Pond, which empties itself into the northern inlet of the east arm of Bonne Bay. Andrew Joe, however, declined to take us out by that route, so we had to climb the western side of the dividing ridge, which rises about 1000 feet above the sea: at the summit it was capped by a large marsh and a pond, where our sportsman shot a duck. We descended to Grassy Pond through a well-wooded tract of country—birch, spruce, and juniper of good size,—but the hill was steep; the top of the ridge and the pond differing 560 feet. We followed a chain of small ponds to the head of the southern inlet, reaching the beach by a steep descent of 400 feet. It was low-water, fortunately, so we waded across the inlet and walked along the beach towards the point of East Ann. Patches of red marl, which rubbed perfectly smooth in the hand, cropped out of the sand in one or two places; it appeared to be well adapted for terra-cotta ware. The hills on the eastern side of Bonne Bay were slate, and reminded some of us of Llanberis in North Wales; but the southern arm, with its high basaltic-looking table-lands, rising about 1700 or 2000 feet above the sea, presented by far the grandest scenery.

Here our journey ended, H.M.S. *Eclipse* again taking charge of us and conveying us round to St. John's.

The accompanying sketch of our route across the island is compiled from data necessarily imperfect and hasty. An aneroid barometer, a prismatic compass, a few pole-star latitudes, and points from Mr. Alexander Murray's Geological Survey of Newfoundland, constituted our resources for a survey. We are indebted to Mr. Murray for the chart on which the work is plotted, and likewise for the description of the red pebbly conglomerate extending from Birchy Pond to the head of Adie's Pond, forming the base of the coal-measures. Signs of glacial action were observed all along this journey, as, indeed, all over the island; the striæ taking the natural trend of the valleys, the grooves and scratches being retained remarkably perfect in the harder rocks.

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